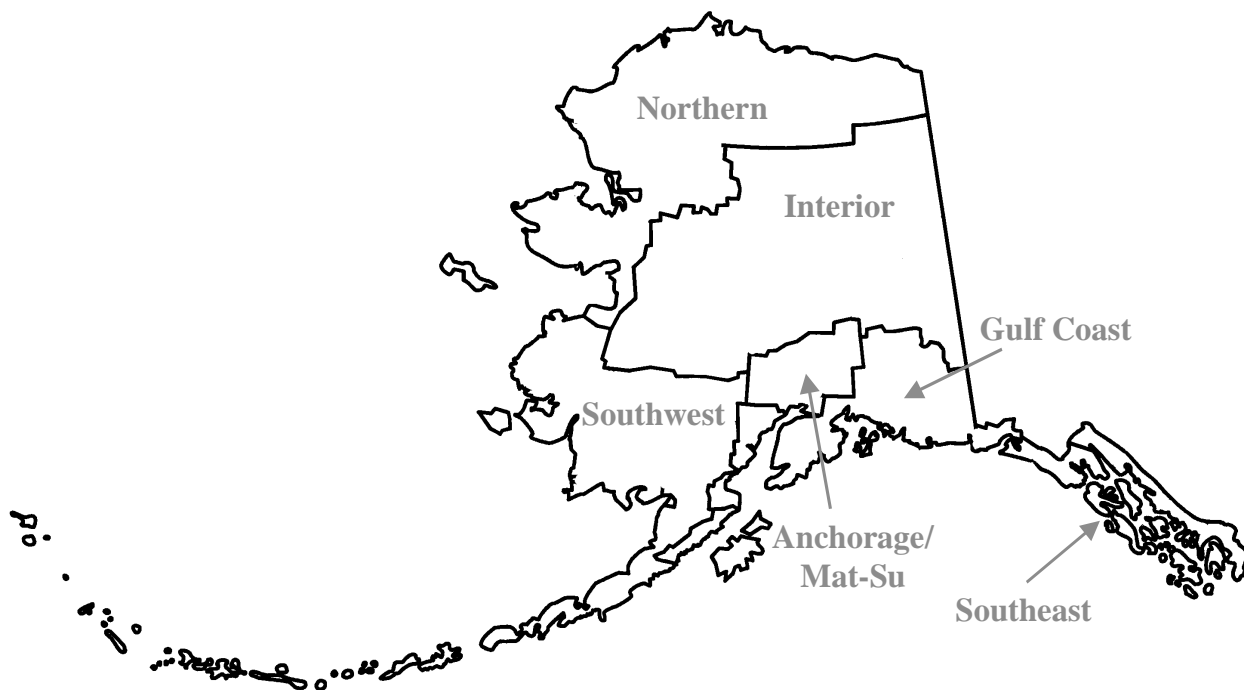


Tuberculosis in Alaska

2012 Annual Report

CDC TB Elimination Cooperative Agreement
U52/CCU007863-19



STATE OF ALASKA

Department of Health and Social Services
Division of Public Health
Section of Epidemiology

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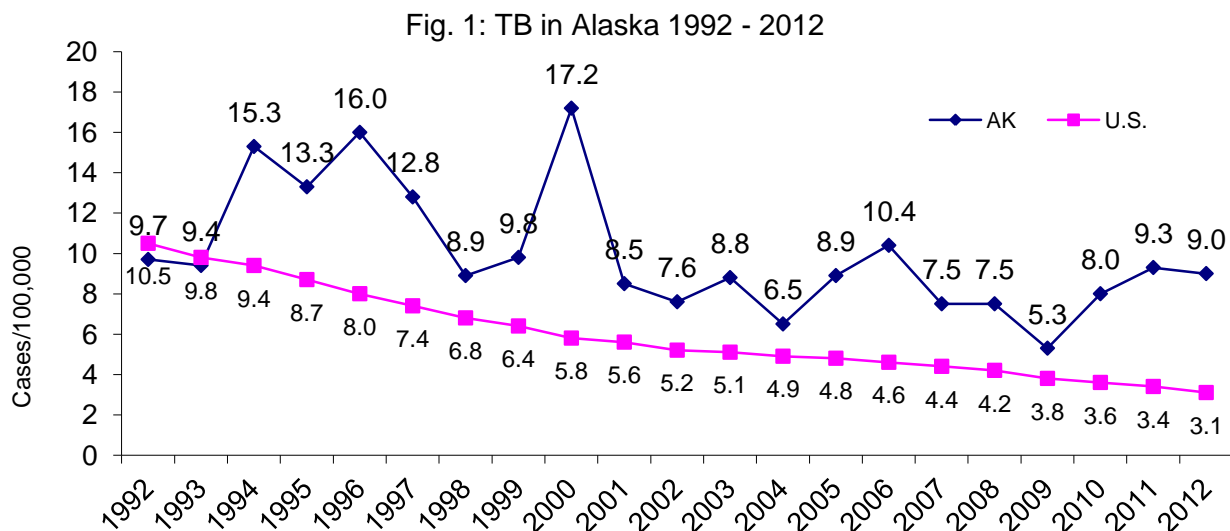
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TUBERCULOSIS IN ALASKA 2012 Annual Report

I. Incidence of Tuberculosis in Alaska

In 2012, 66 cases of tuberculosis (TB) were reported to the Alaska Tuberculosis Program for an incidence of 9.0 cases per 100,000 population. This was a 1% decrease in the number of cases and a 3% decrease in the incidence of tuberculosis when compared to 2011. The United States tuberculosis incidence was 3.1 cases per 100,000 in 2012, a 9% decline from 2011 (Figure 1).



Alaska had one case of Multidrug-Resistant (MDR) TB in 2012. Since 2001, Alaska has had a total of seven other MDR TB cases, one each in 2003, 2006 and 2010, and four in 2011. Two of the MDR cases in 2011 were from the same household with one of these cases foreign-born. The other two cases of MDR TB in 2011 were isolated cases in foreign-born individuals. The one case of MDR TB in 2012 was from an individual whose only other risk factor for TB was spending less than 10 months volunteering at various sites in a former Russian republic country just prior to illness.

Alaska was one of 34 states and the District of Columbia that had a lower incidence of tuberculosis in 2012 compared to 2011.

Alaska was one of 14 reporting areas with a tuberculosis rate that exceeded the national average. The states and district with the highest TB rates are listed in Table 1.

Table 1: States and district with the highest incidence of tuberculosis in 2011¹

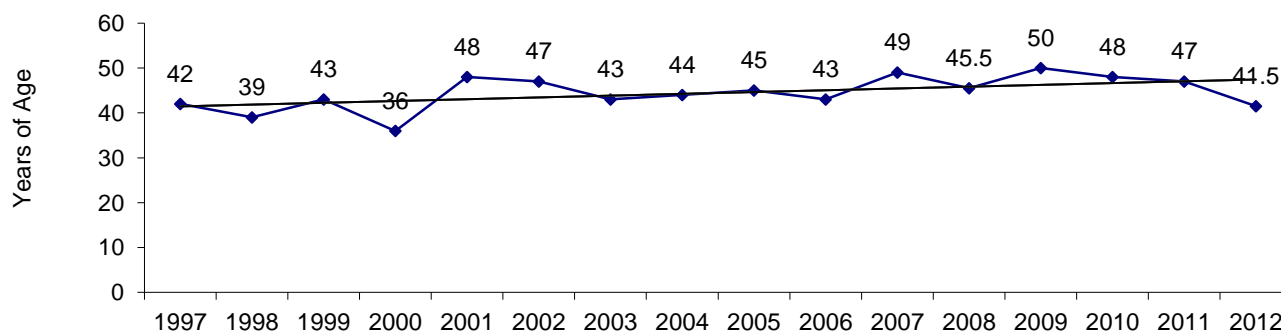
State or District	Number Cases	Incidence of TB	Population
Alaska	66	9.0	722,718
Hawaii	117	8.4	1,392,313
District of Columbia	37	5.9	632,323
California	2,189	5.8	38,041,430
Texas	1,233	4.7	26,059,203

II. Demographics of TB in Alaska

Age

In 2012, the mean age of persons with TB was 39 years; the median age was 41.5 years. Since 1996, the median age has increased (Figure 2).

Fig. 2: Median age of persons with TB in Alaska

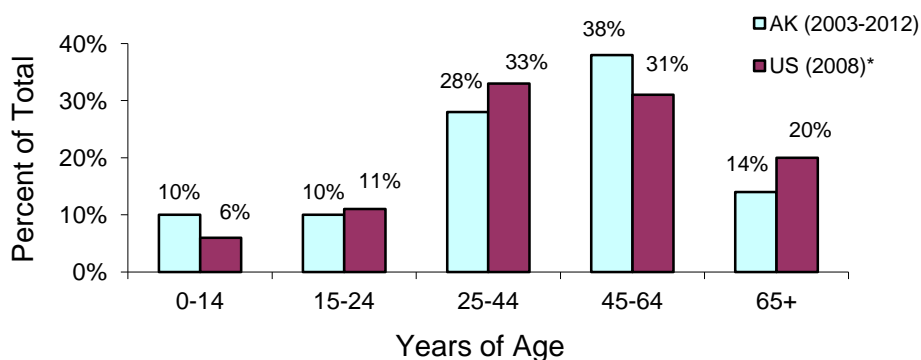


Pediatric TB

Previously, the proportion of TB cases under 15 years of age was greater in Alaska compared to the U.S. overall. This trend is less apparent when looking at age data from 2003 to 2012. The median age of persons with TB in Alaska is similar to that of the United States overall (Figure 3).

¹ Centers for Disease Control and Prevention. Division of Tuberculosis Elimination; preliminary data.

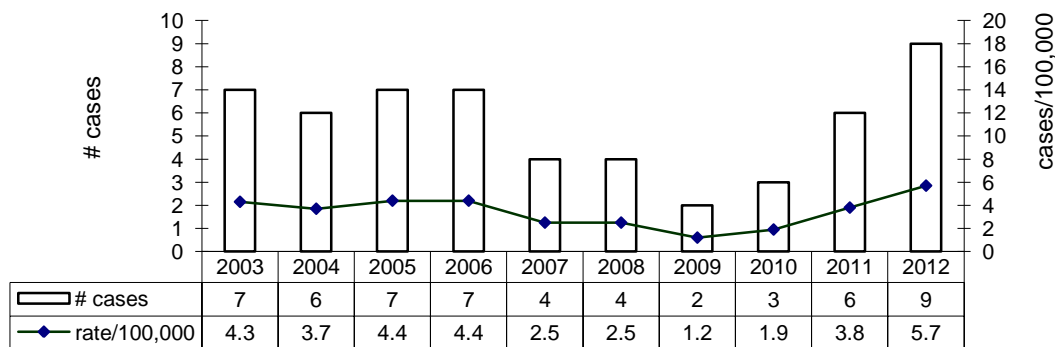
Figure 3: Age of persons with TB: Alaska and U.S.



*CDC. Reported Tuberculosis in the United States, 2010. Atlanta, GA: U.S. Department of Health and Human Services, CDC, October 2011.

For the purposes of this report, a child is anyone less than 15 years of age. In 2012 nine children were diagnosed and treated for tuberculosis, a rate of 5.7 cases per 100,000 children (Figure 4). The rate of pediatric TB in Alaska has ranged from a high of 5.7 cases per 100,000 to a low of 1.2 cases per 100,000 children over the past 10 years. The mean rate over the past 10 years, 2003 – 2012, was 3.4 cases/100,000 children.

Figure 4: Pediatric TB in Alaska, 2003 - 2012



Race

Between 2003 and 2012, a total of 539 cases of TB were reported to the Alaska TB Program. Alaska Native and Asian/Pacific Islanders continue to bear a disproportionate burden of TB in Alaska (Figure 5)(Table 2). Sixty-nine percent (381) of TB cases were Alaska Native, although this group represents only 15% the general population. Nineteen percent (108 cases) were Asian or Pacific Islanders compared with 6% of the general population. Only 10% (53 cases) of TB cases were white and 2% (13 cases) were African American.

Figure 5: Racial Demographics TB in Alaska from 2003-2012 compared to Alaska 2011 Populations Estimates ²

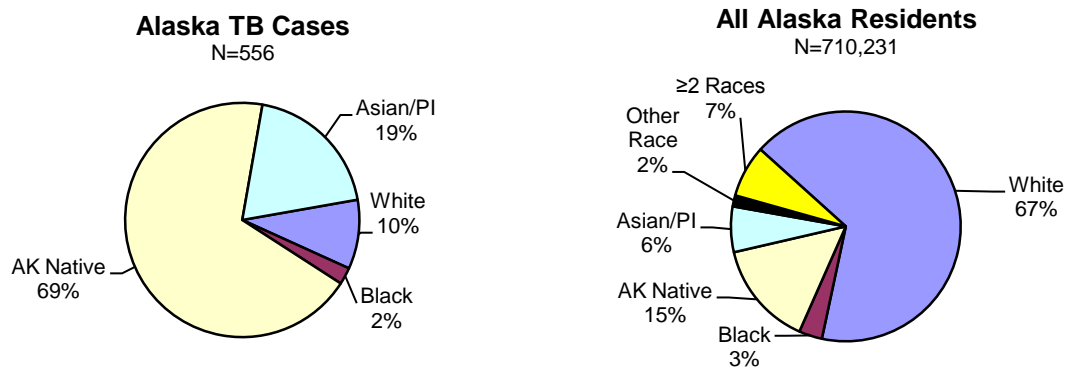


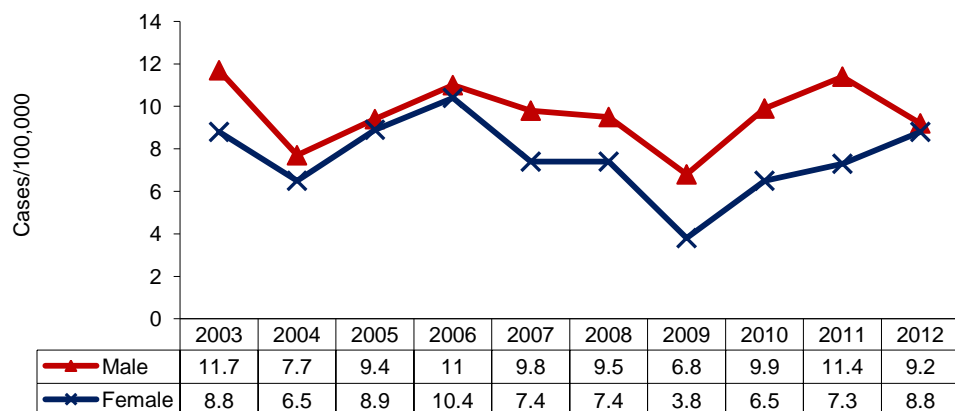
Table 2: Cases and rates of tuberculosis by race over 10 years (N=556)²

Race	2003		2004		2005		2006		2007		2008		2009		2010		2011		2012	
	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate	Cases	Rate
White	4	0.8	3	0.6	8	1.7	6	1.2	9	1.8	5	1.0	2	0.4	5	1.2	7	1.5	4	0.8
Black	0	0.0	2	7.8	1	3.4	2	6.7	1	3.3	2	6.6	1	3.2	2	6.5	1	4.3	1	3.0
Native	41	36.0	30	25.9	30	25.4	50	41.8	32	26.3	33	27.0	25	20.1	41	33.0	47	37.8	52	42.7
Asian/Pacific Islander	12	34.8	8	23.0	20	54.3	12	32.2	8	21.3	10	26.3	9	23.3	9	23.3	12	31.5	8	15.2
Total	57	8.8	43	6.5	59	8.9	70	10.4	50	7.4	50	7.3	37	5.3	57	8.0	67	9.3	66	9.0

Gender

In 2011, 53% of TB case-patients were male. Over the past 10 years, 61% of 539 cases were male and 39% were female.

Fig. 6: Incidence of TB for Males and Females



² <http://www.labor.state.ak.us/research/pop/popest.htm>

Homelessness

In 2012, 6 of 66 (9%) TB case-patients were reported to be homeless.

- Two cases were from Anchorage, an incidence of 50 cases per 100,000 homeless persons, while two homeless persons were from the Southwest Region and Northern Region each. (Table 3).

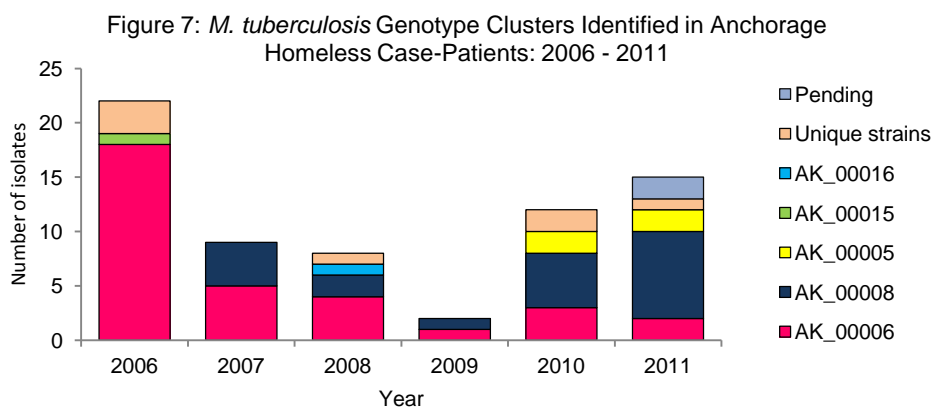


Figure 7 shows the *M. tuberculosis* genotype clusters that have caused TB in homeless persons in Anchorage between 2006 and 2011. A cluster is a genotype that has been seen two or more times in the state. Cluster types AK_0006 was first identified in a homeless TB case in 2005 and there was evidence of ongoing transmission into 2009. Cluster type AK_0008 first appeared in this population in 2007 and has shown transmission through 2011. No isolates matching these clusters were seen in 2012.

Table 3: Number and location of homeless persons with TB over 10 years

Location	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Anchorage/MatSu Region	8	0	1	28	9	8	3	7	12	2
Northern Region			1	3	1	1	1	4	1	2
Southwest Region		1				2		1		2
Southeast Region	1	3				1			2	
Gulf Coast Region				1						
Interior Region				1	1					
Statewide Total	9	4	3	33	13	12	4	12	15	6
%TB cases homeless	16%	12%	5%	47%	26%	24%	11%	21%	22%	10%

* Alaska homeless population data for homelessness is only available for the Municipality of Anchorage.

There had been a decline in new tuberculosis cases among homeless persons in Anchorage from 2006 to 2009, and the years 2010 and 2011 showed a resurgence. AK_0006 strain was predominant in the 2006 outbreak, and AK_0008 was observed in 2010 and 2011.

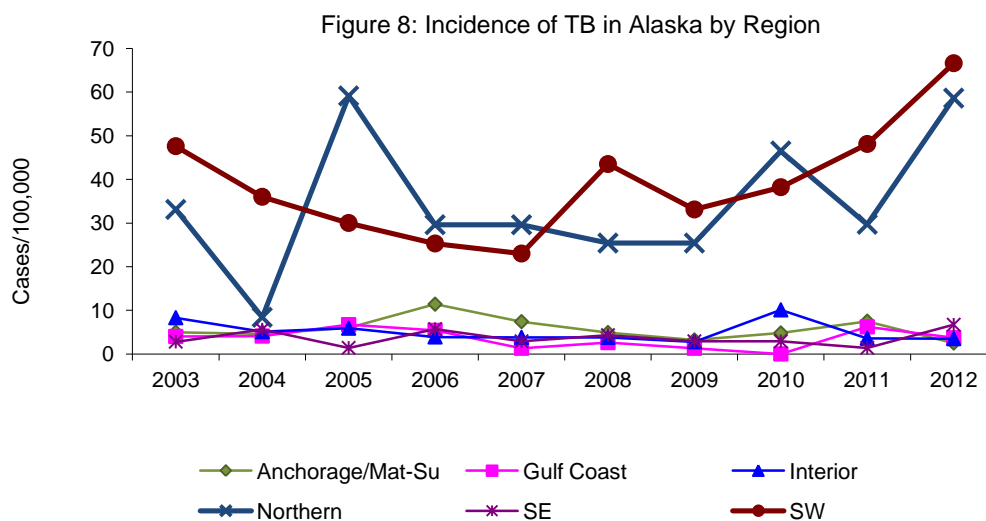
TB screening for homeless individuals is an ongoing challenge. A high proportion of homeless people have long-standing latent TB infection. Therefore TB skin testing is not useful for measuring ongoing TB transmission in shelters and other organizations that serve this population. Symptom screening coupled with sputum tests have become the tools of choice in this population. The Municipality of Anchorage Department of Health and Human Services performs targeted TB screening among the homeless population on a quarterly basis.

Regional trends

The incidence of tuberculosis is not evenly distributed throughout the state. The highest rates are found in the Northern and Southwest regions of the state (Table 4), which also have relatively higher proportions of Alaska Native residents. The six regions of the state are demonstrated in the map on the title page of this document.

Table 4: Number and incidence of TB cases by region and state

Region	2007 (cases/100,000)	2008 (cases/100,000)	2009 (cases/100,000)	2010 (cases/100,000)	2011 (cases/100,000)	2012 (cases/100,000)
Anchorage/Mat-Su	27 (7.4)	19 (5.2)	12 (3.2)	18 (4.8)	29 (7.5)	10 (2.5)
Gulf Coast	1 (1.3)	2 (2.6)	1 (1.3)	0 (0.0)	5 (6.2)	3 (3.7)
Interior	4 (3.8)	4 (3.8)	4 (3.7)	11 (10.1)	4 (3.6)	4 (3.5)
Northern	7 (29.6)	6 (25.4)	5 (21.1)	11 (46.5)	8 (29.7)	16 (58.6)
Southeast	2 (2.9)	3 (4.3)	2 (2.9)	2 (2.9)	1 (1.4)	5 (6.7)
Southwest	9 (23.0)	17 (43.5)	13 (33.1)	15 (38.2)	20 (48.1)	28 (66.6)
STATE TOTAL	50 (7.4)	50 (7.4)	37 (5.3)	57 (8/0)	67 (9.3)	66 (9.0)



The Northern Region includes the North Slope, Maniilaq and Norton Sound areas. The Norton Sound area usually reports the greatest number of TB cases for this region. In 2012, the incidence of TB in the Northern Region was 58.6 cases per 100,000 population, over six

times greater than the state incidence, and almost twice the rate from 2011 (Figure 8). A challenge to TB control in this area is a shift in infrastructure which occurred in 2011 in the Norton Sound area; services previously provided directly by the Norton Sound Health Corporation transferred to the State, with new and unanticipated challenges which are currently being addressed. Recent loss of key public health nursing staff has also been a challenge.

The Southwest Region includes the Yukon-Kuskokwim (Y-K) Delta, Bristol Bay, and the Eastern Aleutian and Aleutian-Pribilof Islands. The 2011 incidence of TB in Southwest Alaska was 48.1 cases per 100,000, and increased to 66.6 cases per 100,000 in 2012. The Y-K Delta area reported the majority of TB activity for this region during 2011 and 2012. Rates of TB in this region have not decreased over time and present an ongoing challenge.

Village and community outbreaks

RURAL VILLAGE OUTBREAKS:

Village A

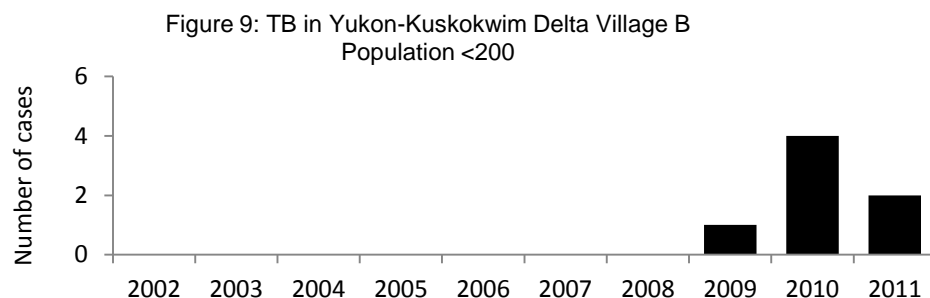
In 2008 and 2009, a total of three cases of TB had the 15524 GENtype, and one TB case was identified in 2010 with this particular GENtype, in the Southwest region. Eight of the nine 15524 GENtype cases in 2012 were from the Southwest Region, including five from Village A. Seven of the eight Southwest Region cases had known links to each other.

Village B

Village B is located in the YK Delta Region and until 2009 had no TB activity since 1991 when a single case was reported. The last outbreak occurred in 1987, when 11 cases of TB were reported. After 19 years without any TB, a single case was reported in 2009, followed by four cases in 2010. More than 2.5% of this community had active TB. Of four isolates available for testing, all were genotype cluster AK_0017 (PCR00015). Two more cases with this genotype were discovered in this village in 2011. In 2012, four further cases with this GENtype (10422) were identified in Alaska, two from this village, one from Anchorage and one from a village in the Northern Region with travel reported to the Southwest, although no direct contact to known active TB cases.

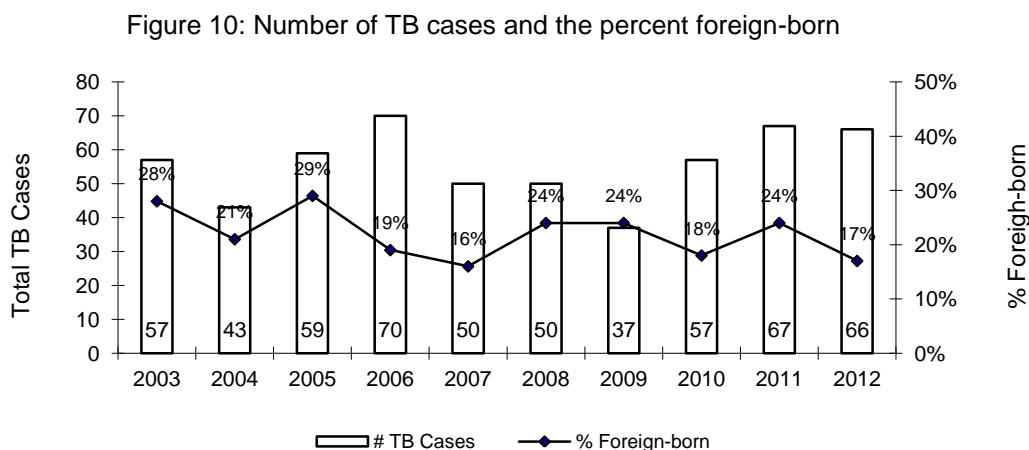
Village C

Village C is located in the YK Delta Region, and had no recent TB activity until 2011. In 2011, four of five active TB cases identified in the village were contacts to each other, and three of the five isolates were resistant to isoniazid. Genotype cluster AK_0005 (PCR01474) was identified for all five cases, and another TB case from the Interior Region listed as a contact had genotype AK_0005 as well. No further active TB cases with matching GENtypes were identified in 2012 (Figure 9).



Foreign-born persons with TB

In 2012, 11 (17%) of 66 TB cases were foreign-born compared to 16 (24%) of 67 TB cases in 2011 (Figure 10). Five individuals were from the Philippines, two individuals were from Mexico, and one each from the Republic of Korea, Thailand, Ethiopia, and El Salvador. In 2011, eight individuals were from the Philippines, and one case each was from Burma, Kenya, Moldova, American Samoa, Dominican Republic, Nepal, Mexico and Laos. In comparison, nationally 63% of all TB case-patients were foreign-born in 2012.³



Between 2003 and 2012, 121 foreign-born persons were diagnosed with tuberculosis in Alaska. They originated from 24 countries (Table 5). The Philippines was the country of origin for 56% of cases, followed by Laos (8%), the Republic of Korea (7%), Mexico (6%), and Thailand (4%).

³ CDC. Trends in Tuberculosis - United States, 2012. Atlanta, GA: U.S. Department of Health and Human Services, CDC, March 22, 2013. The full report is available at http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6211a2.htm?s_cid=mm6211a2_e

Table 5: Country of Origin for Foreign-born TB Cases: 2003-2012

	Country of Origin	TB Cases (%)
Asian and Pacific Island Countries	Philippines	68 (56%)
	Korea, Republic of	8 (7%)
	Vietnam	2 (1%)
	Laos	10 (8%)
	China	2 (2%)
	Thailand	5 (4%)
	Indonesia	2 (2%)
	Burma	1 (1%)
	Singapore	1 (1%)
	Nepal	2 (2%)
	American Samoa	1 (1%)
	Guam	1 (1%)
Latin American Countries	Mexico	7 (6%)
	Dominican Republic	1 (1%)
	Peru	1 (1%)
	El Salvador	1 (1%)
Previous Soviet States	Russia	1 (1%)
	Moldova	1 (1%)
	Ukraine	1 (1%)
	Georgia	1 (1%)
Other	Albania	1 (1%)
	Ivory Coast	1 (1%)
	Kenya	1 (1%)
	Sudan	1 (1%)
	Ethiopia	1 (1%)

Non-pulmonary tuberculosis

From 2003 through 2012, 55 cases or 10% of 556 cases of TB involved at least one extra-pulmonary site (Table 6). The cervical lymphatics (19 cases) and pleura were the two most common non-pulmonary sites.

Table 6: Body site of non-pulmonary TB: 2003-2012

Site	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total
Lymphatic: cervical		3	2	3	2	2	1	3	1	2	19
Genitourinary			2				1	1			4
Pleural		1		2	1	1			1		6
Lymphatic: intrathoracic		1	1				1			1	4
Bone/Joint					1			1	1		3
Pericardium	1		1					1			3
Miliary		1									1
Meningeal	1						1		1		3
Other						1		1	1	2	5
Lymphatic: other										2	2
Ear & mastoid cells							1				1
Eye and Ear						1					1
Peritoneal									1		1
Thyroid/parathyroid											0
Subcutaneous tissue				1							1
Skin/skin appendages	1										1
Total for year	3	6	6	6	4	5	5	7	6	7	55

Mortality related to tuberculosis

There was one individual with TB in 2012 who was dead at diagnosis. Two individuals died during treatment for TB.

- A 52 yo female from the Northern Region with severe end stage chronic obstructive pulmonary disease was hospitalized for respiratory distress. When she clinically decompensated, a bronchioalveolar lavage was performed, and TB was diagnosed. Appropriate therapy was started, but she eventually succumbed to her illnesses.
- A 73 yo male from Anchorage/Mat Su region was hospitalized with a myocardial infarction. A sputum smear was found to be positive for AFB soon after admission. Patient was started on 4 drug therapy, but died three days after hospitalization, related to complications from his cardiac condition.

III. National TB Program Objectives

2012 data were used wherever possible to address the TB Program objectives. However many 2012 TB cases remain open and contact investigations were still in progress at the time of this writing. Where 2012 data was not available, 2011 data were used to measure progress.

Objective 1: Completion of Treatment

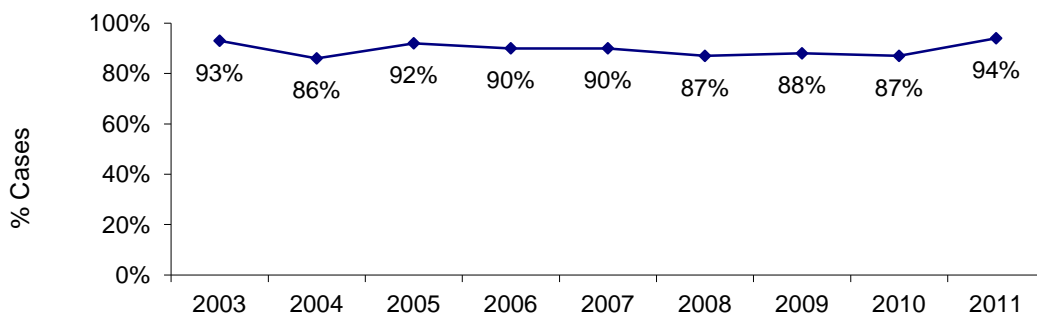
Performance Targets

- By December 31, 2012, at least 91% of persons with newly diagnosed TB, for whom therapy for one year or less is indicated, will complete therapy within 12 months.
 - By December 31, 2015, at least 93% will complete therapy within 12 months.

Status

During 2011, 59 persons were eligible to complete TB treatment within one year's time. The status of six of these cases is incomplete/unknown. Of the remaining 53, 50 (94%) completed therapy within 12 months. For 2012, status is still incomplete/unknown for 29 (44) of TB cases, with 34 (54%) completing therapy within 12 months.

Figure 11: Proportion of TB Cases who completed treatment within 12 months*



* Analysis excludes cases who died before or during treatment or for who m >12 months treatment is recommended, and unknown status.

Major Findings

We are meeting this objective, although there are still unknown/incomplete TB cases.

Barriers

It is not unusual for the treatment period to be extended because patients develop adverse reactions to medications, requiring an alternative regimen. On other occasions, patients are non-compliant or lost to follow-up, usually due to alcohol abuse. State public health law has not been effective in helping us to assure treatment of non-compliant patients.

Objective 2: TB Case Rates

Performance Targets

- By December 31, 2012, the incidence of TB will be reduced:
 - U.S.-born persons who are not Alaska Native to less than 1.5 cases/100,000
 - Alaska Native persons to less than 25 cases/100,000
 - Foreign-born persons to less than 25 cases/100,000
 - U.S.-born non-Hispanic blacks to less than 10 cases/100,000
 - Children younger than 5 years of age to less than 5 cases/100,000.
- By December 31, 2015, the incidence of TB will be reduced:
 - U.S.-born persons who are not Alaska Native to less than 0.7 cases/100,000
 - Alaska Native persons to less than 20 cases/100,000
 - Foreign-born persons to less than 20 cases/100,000

- U.S.-born non-Hispanic blacks to less than 5.0 cases/100,000
- Children younger than 5 years of age to less than 3.6 cases/100,000.

Status

Table 7: Incidence of TB among high risk groups compared to the U.S. born non-Native population

Target Groups	Goal (2012)	2010		2011		2012	
	Incidence per 100,000	Number of Cases	Incidence per 100,000	Number of Cases	Incidence per 100,000	Number of Cases	Incidence per 100,000
U.S. born ⁵ (not Alaska Native/Am Indian)	1.5	6	1.1**	4	0.7	2	0.4
Alaska Native/Am Indian	25.0	41	33.0	47	37.8	52	42.7
Foreign-born ⁴	25.0	7	15.6*	16	30.7	12	23.8
Asian/Pacific Islander	---	9	23.3	12	31.5	8	15.2
African American	5.0	2	6.5	1	4.3	1	4.3
Children <5 y.o.	3.6	1	1.8	4	7.3	2	3.6
ALL Alaska TB Cases	---	57	8.0	67	9.3	66	9.0

*Based on estimates of foreign-born persons living in Alaska

**Based on estimates of U.S.-born persons who are not Alaska Native or American Indian

Major Findings

The incidence of TB was higher than the 2012 objective for Alaska Native/ American Indian persons, and at the goal for children under 5. The objective was met for African American persons, non-Alaska Native U.S. born persons, and foreign-born persons.

Barriers

Accurate census population data for U.S born and foreign-born individuals were not readily available.

Clusters and outbreaks in Alaska Native communities are expected periodically, and will continue to make ongoing TB control very challenging. With overall small numbers of active cases, even small clusters or outbreaks will have dramatic effects on overall rates in Alaska.

⁴ U.S. Census Bureau. Fact Sheet for Alaska

http://www.factfinder.census.gov/servlet/ACSSAFFacts?_event=Search&_name=&_state=04000US02&_county=&_cityTown=&_zip=&_sse=on&_lang=en&pctxt=fph&_submenuId=factsheet_1

Objective 3: Contact Investigation

Performance Targets

- By December 31, 2011
 - 100% of proportion of TB patients with positive AFB sputum-smear results will have contacts elicited
 - 70% of contacts to sputum AFB smear-positive TB cases will be evaluated
 - 50% of contacts to sputum AFB smear-positive TB cases with newly diagnosed latent TB infection (LTBI) will start treatment
 - 50% of contacts to sputum AFB smear-positive TB cases who have started treatment for the newly diagnosed LTBI will complete treatment
- By December 31, 2013
 - 100% of proportion of TB patients with positive AFB sputum-smear results will have contacts elicited
 - 75% of contacts to sputum AFB smear-positive TB cases will be evaluated
 - 65% of contacts to sputum AFB smear-positive TB cases with newly diagnosed latent TB infection (LTBI) will start treatment
 - 62% of contacts to sputum AFB smear-positive TB cases who have started treatment for the newly diagnosed LTBI will complete treatment
- By December 31, 2015,
 - 100% of proportion of TB patients with positive AFB sputum-smear results will have contacts elicited.
 - 80% of contacts to sputum AFB smear-positive TB cases will be evaluated
 - 80% of contacts to sputum AFB smear-positive TB cases with newly diagnosed latent TB infection (LTBI) will start treatment
 - 75% of contacts to sputum AFB smear-positive TB cases who have started treatment for the newly diagnosed LTBI will complete treatment

Status

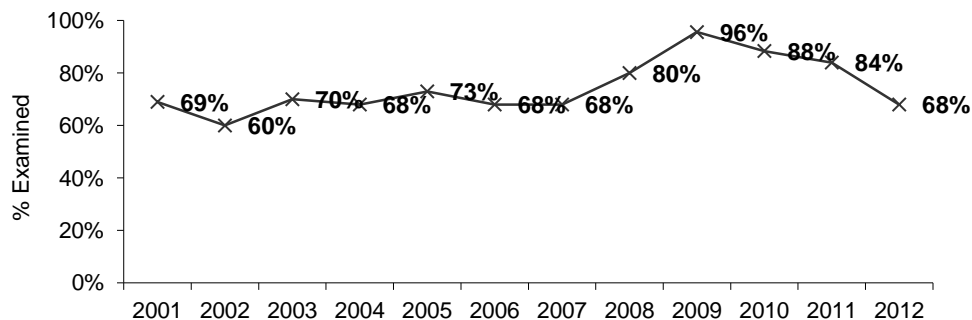
Table 8: Performance Targets for Contact Investigations

Targets	2009	2010	2011	2012*
Cases with named contacts (%)	100.0%	100.0%	100%	100%
# contacts per case	11.33	10.13	11.23	10.89
Contacts evaluated (%)	95.6%	88.4%	84.3%	68.0
% contacts with LTBI	39%	30%	42%	40%
% contacts with TB disease	2.3%	7.5%	6.69%	7.0%
Contacts with LTBI who started Rx** (%)	85.0%	63%	81%	67%
Contacts with LTBI who completed Rx (%)	91.0%	44%	62%	27%

*Preliminary Data

**Contacts with LTBI who were not previously treated for LTBI

Figure 12: Percent of contacts to AFB smear positive cases who were examined



*Preliminary data for 2012

Major Findings

This objective was met:

For 2008, 2009, 2010, 2011 and 2012, 100% of cases identified contacts (Table 8).

Additional analysis is based on 2011 data because 2012 contact investigations are not complete.

- 284 of 337 (84%) of contacts to 30 AFB smear positive cases were examined. We believe that this result is due to nurse-to-nurse training regarding case management and contact evaluation. In addition, the TB Program developed updated contact evaluation form that many public health nurses are using to record results of their investigations.

- 102 persons were found to have LTBI, however 43 had received previous treatment. Of the 59 remaining contacts with LTBI, 44 (75%) started treatment.
- Of 44 contacts who started LTBI treatment, 64% completed treatment.

See Appendix E for ongoing programmatic efforts to improve contact investigations.

Barriers

The challenges to identifying and locating contacts in remote Alaska, accessible only by small aircraft, have already been discussed in previous grant proposals. These challenges have not changed. We anticipate increased completion rates with increased use of the 12 week isoniazid/rifapentine regimen.

Objective 4: Laboratory Reporting: Turn-around Time & Drug Susceptibility Results

Performance Targets

- By December 31, 2012:
 - 80% of culture-positive or nucleic acid amplification test-positive *M. tuberculosis* complex results will be reported by the laboratory within 21 days from the date the initial specimen is received.
 - 100% of initial *M. tuberculosis* isolates will undergo susceptibility testing
- By December 31, 2015:
 - 85% of culture-positive or nucleic acid amplification test-positive *M. tuberculosis* complex results will be reported by the laboratory within 21 days from the date the initial specimen is received.
 - 100% of initial *M. tuberculosis* isolates will undergo susceptibility testing

Status

Table 9: Laboratory turn-around times for TB culture and susceptibility reports

Laboratory Objectives	2009	2010	2011	2012
% positive AFB cultures reported within 21 days	80%	78%	93%	92%
% <i>M. tuberculosis</i> isolates sent for susceptibility testing	100%	100%	98%	98%

Major Findings

This objective was met, with 92% of positive cultures reported within 21 days. All isolates at the Alaska State Public Health Laboratory and outside reference laboratories underwent susceptibility testing.

Barriers

Sputum specimens from remote Alaska can take from 7 days or longer to arrive at the State Laboratory. During winter months, specimens may undergo one or more freeze-thaw cycles during transit. This can increase bacterial overgrowth as well as the viability of the *M.*

tuberculosis organism, delaying isolation in culture. These situations are out of the Laboratory's control, but may contribute to delays in turn-around times for culture.

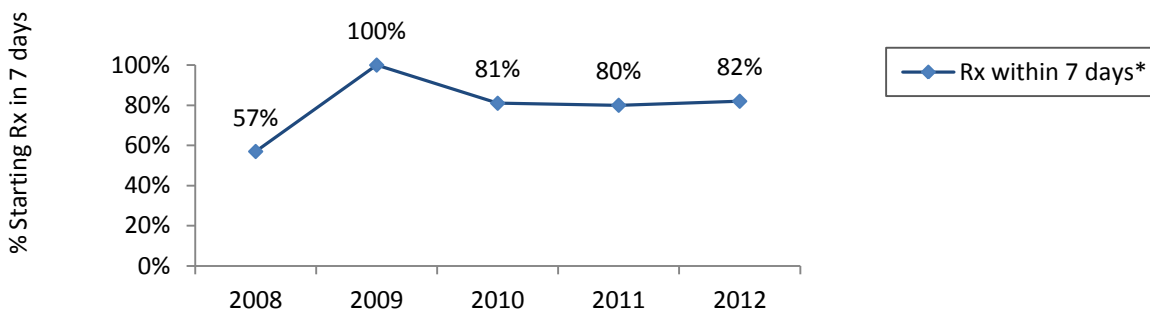
Objective 5: Treatment Initiation

Performance Targets

- By December 31, 2012, 70% of TB patients with positive AFB smears will begin treatment within 7 days of specimen collection.
 - By December 31, 2015, 90% of TB patients with positive AFB smears will begin treatment within 7 days of specimen collection.

Status

Figure 13: TB treatment initiated for AFB+ cases ≤7 days of report to the Alaska TB Program*



*Dead at diagnosis and unknown status excluded

Major Findings

When our program fully transitions and implements the new TB program module to replace TIMS, data accuracy and completeness will improve.

In 2012, there were 27 smear positive cases reported, one was dead at diagnosis, 4 (15%) had status unknown. 18 (82%) initiated therapy within 7 days, meeting this objective.

Barriers

Specimens from rural Alaska may take up to 7 days (sometimes longer) to arrive at the State Laboratory. Occasionally the collection date is not written on the specimen container or requisition slip. Many specimens are collected in remote villages with non-licensed community health aides (CHAs) serving as health care providers. There is a high turn-over rate for CHAs and education about collection and labeling of sputum specimens has not been successful.

Due to the barriers noted above, the specimens with unknown status were eliminated from the analysis.

Objective 6: Sputum Culture Conversion

Performance Targets

- By December 31, 2012, 55% of TB patients who have culture-positive sputa will have culture negative sputa within 60 days of initiating treatment.
 - By December 31, 2015, 61.5% of TB patients who have culture-positive sputa will have culture negative sputa within 60 days of initiating treatment.

Status

Table 10: Days of treatment to sputum culture conversion for culture-positive TB cases

Days of treatment until sputum culture conversion (days)	2009 (27 cult. + cases)	2010 (45 cult. + cases)	2011 (55 cult + cases)	2012* (49 cult + cases)
0 – 60	11 (41%)	23 (51%)	31 (63%)	24 (63%)
61 – 120	9 (33%)	10 (22%)	15 (31%)	12 (32%)
121 - 180	0 (0%)	4 (9%)	3 (6%)	2 (5%)
181 - 240	1 (4%)	0 (0%)	0 (0%)	0 (0%)
241 - 300	1 (4%)	0 (0%)	0 (0%)	0 (0%)
301 - 365	0 (0%)	0 (0%)	0 (0%)	0 (0%)
No documented conversion (died or other)	5 (19%)	7 (16%)	6 (11%)	11 (22%)

*Preliminary data

Major Findings

In 2010, of 45 culture-positive TB cases, 51% had documented sputum conversion within 60 days of treatment initiation. Another 22% converted within 120 days. Four cases had conversion between 121-180 days after beginning treatment.

In 2011, of 55 culture-positive TB cases, 63% had documented sputum conversion within 60 days of treatment initiation. Another 31% converted within 120 days, and three cases had conversion between 121-180 days after beginning treatment.

In 2012, of 49 culture-positive TB cases, 63% had documented sputum conversion within 60 days of treatment initiation. Another 32% converted within 120 days, and two cases had conversion between 121-180 days after beginning treatment. Three patients either died or were dead at diagnosis.

Extensive disease requiring an extended treatment regimen, delays in obtaining sputum because of remote location or failure to request a sputum and poorly compliant patients continue to play roles in delays of culture conversion.

Data are still preliminary for 2012.

Barriers

Community health aides, the primary care providers in many remote villages, are sometimes unaware of the need to document sputum conversion. High turnover of community aides makes ongoing education a daunting task. As a result, sputum may not be collected on a monthly basis, and prolonged conversion data may be misleading.

We are still in the process of switching from TIMS to a new data system, a TB PAM that is a component of our disease surveillance system AK STARS. We are still working with the vendor to develop and implement this system, and analysis of TB data is still a challenge. Much of the analysis for this report was done by individual chart review – a time consuming process.

Additionally, State public health law has not been effective in helping us assure treatment of non-compliant patients.

Objective 7: Data Reporting

Performance Targets

- By December 31, 2012, 99% of core RVCT⁵ data items will be reported to CDC. This proportion will be maintained through 2015
- By December 31, 2012, 80% of ARPE⁶ core data will be reported to CDC.
 - By December 31, 2015, 100% of ARPE core data will be reported to CDC.
- By December 31, 2012, for individuals who can be located, 60% of core EDN⁷ data items will be reported to CDC
 - By December 31, 2015, for individuals who can be located, 90% of core EDN data will be reported to CDC.

Status

RVCT

For 2009, two RVCT fields remain incomplete: HIV status and HIV ages 25-44. This was the last year that RVCT data was transmitted using TIMS.

RVCT data transmission for 2010 to the CDC TB Elimination program using our new TB PAM was started in February 2011. Seven fields remain incomplete for 2011, and at the time of transmission for 2012, 20 fields were incomplete. The mean transmission rate was 92% for 2012. See Appendix B for more detail.

ARPE Reports

Our 2010 and 2011 ARPE reports have been faxed to CDC.

⁵ Report of Verified Tuberculosis Case manual at <http://www.cdc.gov/tb/programs/rvct/ParticipantManual.pdf>

⁶ Aggregate Reports for Tuberculosis Program Evaluation manual:
http://www.cdc.gov/TB/publications/PDF/ARPEs_manualsm1.pdf

⁷ Electronic Data Notification, a secure Internet based system for immigrants and refugees with B1 and B2 tuberculosis classification, developed and implemented by the Division of Global Migration and Quarantine (DGMQ).

Major Findings

The RVCT data and ARPE reports are in good standing as of 2011. Although the new TB PAM is able to electronically transmit all RVCT fields to CDC, we continue to work with the new module, and with the export and query functions to be able to analyze the data for programmatic reports. Unfortunately, much of the program evaluation is still done using hand review of paper charts. Currently, we are unable to extract the EDN data to analyze it for this report, although we are working on plans to improve our EDN system.

Barriers

See above comments.

Objective 8: Recommended Initial Therapy

Performance Targets

- By 2012, at least 93.4% of patients with TB will start treatment using a 4-drug regimen.
 - By 2015, at least 95% of patients with TB will start treatment using a 4-drug regimen.

Status

Table 11:

Number of drugs used at initiation of treatment	2009	2010	2011	2012
0	1* (3%)	0 (0%)	0 (0%)	0 (0%)
1	0 (0%)	0 (0%)	0 (0%)	0 (0%)
2	0 (0%)	0 (0%)	0 (0%)	0 (0%)
3	1 (3%)	5 (9%)	6 (9%)	4 (6%)
4	34 (92%)	49 (86%)	59 (88%)	58 (89%)
>4	1 (3%)	3 (5%)	2 (3%)	3 (5%)
Total	37 (100%)	57 (100%)	67 (100%)	66(100%)

* In 2009, one case died from TB prior to initiation of any treatment.

**

Major Findings

The intent of this objective was met. In 2010, 86% of 57 cases started a four drug regimen. In 2010, five cases started on a three-drug regimen: two children were started on 3-drugs prior to immigrating to the U.S. One child was culture negative and started on 3-drugs because her mother's strain was susceptible to all first-line agents. One adult was started on 3 drugs because she initially refused treatment and her susceptibility results were back when she did begin treatment. One patient was started on an alternative liver safe regimen.

In 2011, 88% of 67 cases started a four drug regimen for active TB. Six patients started with three drugs only. One was a child whose grandmother had pan-sensitive disease, and ethambutol was not started. Two were from small villages with known recent isoniazid resistance, and isoniazid was not started. Two had culture results showing isoniazid resistance before they started their regimens. One was started on a TB regimen out of state, and pyrazinamide was not started due to a history of gout.

In 2012, 94% of 66 cases started at least 4 drugs initially.

Barriers

Public health nurses and providers in Alaska have accepted the 4-drug regimen as the standard of care. In cases where the TB patient is epidemiologically linked to another case with known susceptibilities, the patient is started on a 3-drug regimen. There are occasions where a four drug regimen may not be appropriate or necessary.

Objective 9: Universal Genotyping

Performance Targets

- By December 31, 2012, at least 94% of all first *M. tuberculosis* isolates of TB patients will be submitted for genotyping results.
 - By December 31, 2015, at least 98% will be submitted for genotyping results.

Status

Two MTB isolates were from repeat cases and were not submitted for genotyping, but these repeat cases will be submitted in the future. All other *M. tuberculosis* isolates from the Alaska State Public Health Laboratories were submitted for genotyping in 2010, 2011 and 2012. One isolate reported as submitted by the lab was not found by the genotyping group, and this is being re-submitted. The Alaska TB Program makes every attempt to collect isolates from specimens that were sent to out-of-state laboratories and send them for genotyping as well.

Major Findings

Overall, the system for *M. tuberculosis* genotyping is working well and provides valuable epidemiological data to the Alaska TB Program.

Barriers

Out-of-state reference laboratories do not routinely send Alaska resident TB isolates to the State Public Health Laboratory. The Alaska TB program must make special arrangements for isolates from outside reference laboratories to be sent to our state laboratory, where they will be forwarded for genotyping.

Objective 10: Known HIV Status

Performance Targets

- By December 31, 2012, at least 80% of patients with tuberculosis who are 15 through 54 years of age will undergo HIV testing.
 - By December 31, 2015, at least 95% of patients with tuberculosis who are 15 through 54 years of age will undergo HIV testing.

Status

Table 12: HIV status for TB cases 15-54 years of age

Year	TB Cases offered HIV testing					HIV testing not offered	Unknown or blank	Total
	HIV -	HIV +	Refused testing	Result unknown	% Offered testing			

2009	17	1	0	0	95%	0	1	19
2010	31	1	0	0	97%	0	1	33
2011	38	1	0	0	98%	1	0	40
2012	37	0	1	0	100%	0	4	42

Major Findings

This objective was met. There has been overall acceptance of HIV testing by both providers and TB patients.

Barriers

There are few barriers to HIV testing, even in the most remote parts of the state. This is a vast improvement when compared to 10 years ago.

Objective 11: Evaluation of Immigrants and Refugees

Performance Targets

- By December 31, 2012, 75% of immigrants and refugees will initiate medical evaluation within 30 days of arrival to the U.S.
 - By December 31, 2015, 85% of immigrants and refugees will initiate medical evaluation within 30 days of arrival
- By December 31, 2012, 65% of those who initiate medical evaluation will complete evaluation within 90 days of arrival to the U.S.
 - By December 31, 2015, 75% of those who initiate medical evaluation will complete evaluation within 90 days of arrival to the U.S.
- By December 31, 2012, 50% of those who are diagnosed with LTBI, for who treatment is indicated, will start treatment
 - By December 31, 2015, 65% of those who are diagnosed with LTBI, for who treatment is indicated, will start treatment
- By December 31, 2012, 40% of those who are initiate LTBI treatment will complete an accepted course or treatment
 - By December 31, 2015, 50% of those who are initiate LTBI treatment will complete an accepted course or treatment

Status

During 2012, 149 immigrants and refugees were reported to Alaska. Data available at this time is reflected in the table below.

Table 13: Parameters for TB Evaluation of Immigrants and Refugees

	2010	2011	2012*
Total number of immigrants/refugees reported to the AK TB Program through EDN	151 (100%)	145 (100%)	149 (100%)
TB evaluation initiated ≤ 30 days of arrival in U.S.	40 (26%)	120 (83%)	47 (32%)
TB evaluation initiated and completed ≤ 90 days of arrival in U.S.	20 (50%)	13 (11%)	37 (79%)
LTBI treatment initiated	46 (90%)	17 (74%)	26 (55%)
LTBI treatment completed*	0 (0%)	1 (6%)	0 (0%)

*incomplete data

Major Findings

This objective is partially met. In 2011, 83% of immigrants and refugees had required TB evaluation initiated within 30 days, and this dropped to 32% in 2012. This is primary due to staffing difficulties and work backlogs currently being experienced at the Municipality of Anchorage, where the majority of immigrants and refugees in Alaska seek their evaluations. However, in 2012 79% of immigrants and refugees who initiated their evaluation completed the evaluation within 90 days of arrival. In 2012, 55% of those offered LTBI treatment initiated therapy. The treatment completion data has not been entered into EDN.

EDN adds yet one more data system to the TB Program, one that is slow and cumbersome from the state's perspective. We have learned how to extract some of the data to allow analysis for this objective. The next steps are:

1. Educate public health nurses throughout the state on the use and reporting of the data forms
2. Develop a reminder system to enhance the return of report forms.
3. Enter the data back into EDN in a timely manner.

Barriers

The EDN system has made the process of immigrant/refugee follow-up more cumbersome for us. The paperwork has increased, and this has led to confusion at the public health center level. We have had to develop an educational program to train the local public health nurses on the process and use of the new forms. The data, once entered, is cumbersome to extract and analyze, although we are hopeful that this will improve as the system is upgraded and we gain more experience.

Objective 12: Sputum-Culture Reported

Performance Targets

By December 31, 2012, 95.7% of patient with pleural or respiratory site TB will have a sputum-culture result reported. This rate will be maintained through December 31, 2015.

Status

Table 14: Sputum culture reports for pulmonary & pleural TB cases

	2009	2010	2011	2012
Sputum culture report available	32 (100%)	48 (96%)	60 (98%)	56 (95%)
No sputum culture report available	0	2 (7%)	1 (2%)	3 (5%)
Total pulmonary/pleural cases	32 (100%)	50 (100%)	61 (100%)	59 (100%)

Major Findings

This objective was met in 2009, 2010, 2011 and almost met in 2012. In 2009, all cases with pulmonary or pleural disease had sputum submitted to AFB smear and culture. In 2010, 96% had sputum reports in the record, and 98% had sputum reports in the record for 2011. The one case with no sputum culture result was a child household contact to smear positive TB, with a newly converted skin test and hilar adenopathy on chest radiograph. In 2012, 95% had sputum reports in the record.

Barriers

Pediatric cases and those who initiate treatment in other countries may not submit sputum specimens.

Objective 13: Program Evaluation

Cohort Review:

The Alaska TB program performed one cohort review with the Municipality of Anchorage Department of Health and Human Services (MOA DHHS) in February 2011. MOA DHHS has approximately 40 to 45% of all TB cases in the state annually. In addition, they provide services for cases from other regions of the state that are in Anchorage for consultative services. Currently, the Alaska TB Program performs case reviews of all MOA DHHS active TB cases on a twice-monthly basis.

Maggie Grinnell, a Public Health Associate Program (PHAP) worker, joined the program in July 2012 and compiled materials and forms used in many other jurisdictions for cohort review. After careful examination of her work, a decision was made to resume cohort review before the end of 2012. That decision, however, was reevaluated after Alaska's TB nurse case manager Karen Martinek participated in the 2012 TB PEN – ETN Meeting and attended the breakout session and poster presented by the Washington TB Program, a long-standing champion of cohort review. It seems that Washington has reconsidered its cohort review process as a result of dwindling interest and participation in favor of more “real time” case reviews that also focus on indicator data. Alaska has continued to standardize monthly case review data elements, reporting, and feedback. It is anticipated that retrospective cohort review will be revisited in 2013 while monthly real time case management meetings and teleconferences continue.

Please see Appendix D for an update of our program evaluation project.

Objective 14: Human Resource Development Plan

Please see Appendix D for an update on our human resource development plan.

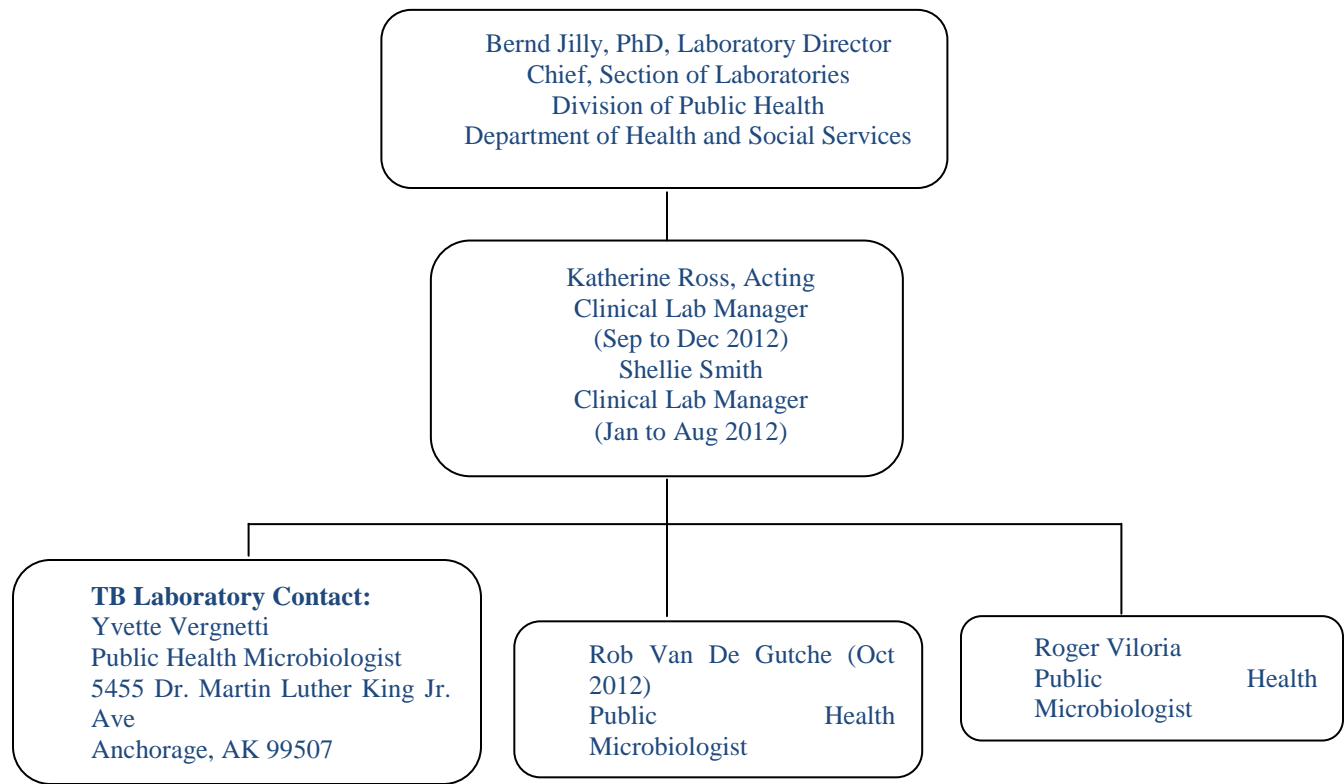
Objective 15: Training Focal Point

Karen Martinek serves at the Alaska TB Program Training focal point.

IV. TB Public Health Laboratory

The Alaska State Public Health Laboratory (ASPHL) TB Department is located in Anchorage, Alaska and is the only full-service TB laboratory in the state. ASPHL processes patient samples, identifies mycobacteria and performs first-line drug susceptibility testing of *Mycobacterium tuberculosis* complex isolates. Currently, three microbiologists share the duties of performing all testing in the TB Laboratory and report to upper management as needed.

Organizational Chart of the ASPHL TB Laboratory



TB specimen processing occurs Monday through Friday. All specimens received by 8:00 am are processed the same day as received. All samples are logged into *Horizon*, ASPHL’s Laboratory Information Management System (LIMS). The system assigns a laboratory accession number, appropriate tests to each sample, and generates labels for each container. This is followed by demographic information entry for each specimen (i.e., patient name, date of birth, unique identifier, collection date and time, submitter, etc.). Samples are processed by a NALC-NaOH digestion-decontamination procedure. All specimens are inoculated onto a Middlebrook 7H10 or Selective 7H11 plate and into BACTEC MGIT 960 liquid medium (with the exception of blood and stool). AFB concentrated smears are prepared, read and reported the same day the sample is processed. Positive AFB smears are called to the submitter and the Section of Epidemiology – TB Control the same day they are observed. A preliminary report for negative cultures is generated at three weeks and a final report at six weeks, and mailed to each submitter. Positive cultures are reported to the submitter and TB

Control via telephone/fax as soon as a positive identification is made and final reports are mailed. *Mycobacterium tuberculosis* complex is identified using Gen-Probe AccuProbe or the Agilent MIDI HPLC mycolic acid analysis identification test.

Susceptibilities are performed on all initial positive specimens. First-line drug susceptibilities are performed using the BACTEC MGIT 960 liquid culture system. All drug-resistant isolates are retested in-house and sent to National Jewish Health for confirmation. Results are immediately reported to the submitter and TB Control. Repeat identification and susceptibilities are performed only if the patient is culture positive three months after initial identification.

ASPHL Workload	2010	2011	2012
a. Total number of clinical specimens processed and cultured	4394	5151	5725
b. Number of individual patients for whom a clinical specimen was processed and a TB culture inoculated	2010	2166	2397
<ul style="list-style-type: none"> Number of individual patients for whom at least one culture was positive for <i>M. tuberculosis</i> complex 	46	57	49
c. Number of individual patients for whom a reference isolate was received by ASPHL to rule out or confirm the identification of <i>M. tuberculosis</i> complex	0	0	0
<ul style="list-style-type: none"> Number of individual patients that had at least one reference isolate identified 	0	0	0
d. Number of individual patients for whom <i>M. tuberculosis</i> drug susceptibility tests were performed for first-line drugs	46	60	50
e. Number of individual patients from ASPHL for whom a clinical specimen was tested directly with a NAAT or other rapid detection test.	2	4	111
f. Number of individual patients for whom ASPHL referred an isolate of <i>M. tuberculosis</i> complex for genotyping.	50	57	51

2. Progress towards meeting CDC recommendations as described in Tenover, et al. and Styrt et al. and the Healthy People 2020 goal.

Meeting sample transit time goals is a continued challenge for the ASPHL and remains out of ASPHL's ability to change. Approximately 52% of TB specimens are collected in the Anchorage/Mat-Su area and delivered by courier services within 1–3 days. Forty-eight percent (48%) of TB specimens originate from outside the Anchorage/Mat-Su area. Alaska is unique geographically, and the vast distance, absence of roads, extreme weather conditions and sporadic transportation schedules play a significant role in sample transit time for these specimens.

CY2010	CY2011	CY2012	Description of turnaround times (TAT) for initial diagnostic specimens
			1. Promote rapid delivery of specimens. (TAT goal: Specimens should be received in the laboratory within 24 hours of specimen collection) Report the percent of specimens received within 1, 2, and 3 calendar days
33%	36%	41%	% of specimens received within 1 calendar day
15%	13%	12%	% of specimens received within 2 calendar days
15%	12%	12%	% of specimens received within 3 calendar days
			2. Use fluorescent acid-fast staining and promptly transmit results by phone, FAX or electronically. (TAT goal: Report acid-fast microscopy results within 24 hours of specimen receipt) Report the percent of acid-fast smear results reported within 1, 2 and 3 calendar days
94%	93%	98%	% of AFB results reported within 1 calendar day
0%	3%	1%	% of AFB results reported within 2 calendar days
3%	1%	1%	% of AFB results reported within 3 calendar days
			3. Identify growth as acid-fast and use rapid methods to Identify isolates as <i>M. tuberculosis</i> complex as soon as possible and report result promptly. (TAT goal: 14-21 calendar days from receipt) Report percent of <i>M. tuberculosis</i> complex isolates identified from initial diagnostic specimens (e.g. sputum, CSF, etc.) identified within 21 calendar days
78%	93%	92%	% of <i>M. tuberculosis</i> isolates identified within 21 calendar days
			4. Determine the susceptibilities (DST) of initial <i>M. tuberculosis</i> complex isolates to first-line drugs in a rapid culture system and report results promptly. (TAT goal: 21-28 calendar days from receipt of specimen) Report the percent of SIRE susceptibility results reported for <i>M. tuberculosis</i> isolates from initial diagnostic specimens within 28 days.
65%	80%	69%	% of 1 st line DST results reported within 28 calendar days
0	0	18	Report the number of individual patients for whom laboratory confirmation of tuberculosis was provided within 48 hours of clinical specimen (i.e., sputum, CSF, etc.) receipt (i.e., use of NAAT or

			direct HPLC)
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3. Laboratory Goals

Component I: CDC and HP2020 Recommended Laboratory Activities and Turnaround Times

Program Need

ASPHL needs to improve turnaround times for first-line drug susceptibility results (21-28 days). Long transport times from remote areas adversely affect growth and isolation of *M. tuberculosis* complex.

ASPHL needs to meet the 48 hour TAT on the diagnosis of *M. tuberculosis* complex. ASPHL has validated an in-house Real-time PCR test for the identification of *M. tuberculosis* complex.

Objective

1. ASPHL will meet TAT for first-line drug susceptibility results ≥ 75 %.
2. ASPHL will perform NAAT (TB PCR) for laboratory confirmation of *M. tuberculosis* complex to meet TAT within 48 hours.

Method

1. Implemented the use of commercial reagents for digestion and decontamination for processing TB samples.
2. ASPHL received a grant from APhL for the development and implementation of molecular testing for the identification of *M. tuberculosis* complex. TB PCR testing is now in use at the ASPHL.

Evaluation

1. ASPHL will continue to monitor the contamination rate monthly.
 - ASPHL was unable to meet this objective; 69% of first-line DST results were reported within 28 calendar days. This is still an area needing improvement and is a laboratory goal for 2013.
2. ASPHL has validated an in-house Real-time PCR method for the identification of *M. tuberculosis* complex.
 - ASPHL has been routinely performing TB PCR for the identification of *M. tuberculosis* complex on initial AFB smear positive respiratory specimens. Eighty-percent (80%) of the AFB smear positive samples that identified as MTC were reported within the 48 hour TAT. TB PCR was performed on AFB smear negative specimens when requested by TB Control.

Component II: Development of a System to Provide Timely and Reliable Laboratory Testing in Support of TB Treatment and Control Efforts

Program Need

The ASPHL is the only full-service TB laboratory in the state and requires satisfactory samples in order to provide timely and reliable testing. It is important ASPHL communicates with submitters and health care providers regarding questionable samples received or any other TB testing concerns.

Objectives

1. ASPHL will continue to give feedback (in a report form) to specific submitters regarding unsatisfactory samples received.
2. ASPHL will inform and educate the health care community about our in-house TB PCR test available for the identification of *M. tuberculosis* complex.

Methods

1. Send a report with data exported from our Laboratory Information Management System (LIMS) to specific submitters. It includes the following information:
 - Submitter
 - Number of samples received for AFB testing
 - Number of unsatisfactory samples with explanation as to why they were rejected
 - Helpful information on proper collection and transportation of samples (if needed)
 - ASPHL TB contact information
2. A newsletter or EPI Bulletin will be sent to the health care community to introduce the ASPHL NAAT.

Evaluation

1. Compare data every six months to see if there is a decrease in the receipt of unsatisfactory specimens.
 - The number of unsatisfactory specimens received in 2012 decreased from 165 (January to June) to 124 (July to December). The 2012 annual report will be sent by June 1, 2013 and include more thorough analysis.
2. Follow-up with any questions from health care providers regarding sample type, patient criteria, etc. in order for submitters to request NAAT for the identification of *M. tuberculosis* complex and make recommendations as needed.
 - A State of Alaska Epidemiology Bulletin was published, “**Tuberculosis Update: LTBI Therapy and TB PCR Testing**,” Bulletin No. 25, December 4th, 2012. http://www.epi.alaska.gov/bulletins/docs/b2012_25.pdf. This bulletin was sent to Alaska submitters, clinicians, public health nurses, community health aids, etc. to advertise the TB PCR test and provide interpretive guidance of test results.

V. Appendices

Appendix A: Summary information about tuberculosis in Alaska: 2003 – 2012

Appendix B: Surveillance Completeness Summary Report

Appendix C: Alaska Historical TB Control Objectives

Appendix D: TB Program Training and Human Resource Strategy Plan

Appendix E: TB Evaluation Plan Progress Report

Appendix A: Summary information about tuberculosis in Alaska: 2000-2012

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
No. of TB cases	57	43	59	70	50	50	37	57	67	66
Alaska population	647,747	656,834	663,253	670,053	676,056	681,977	692,314	710,231	722,190	732,298
Alaska case rate (per 100,000)	8.8	6.6	8.9	10.4	7.3	7.3	5.3	8.0	9.3	9.0
USA case rate (per 100,000)	5.1	4.9	4.8	4.6	4.4	4.2	3.8	3.6	3.4	3.2
Alaska population 0-14 years	159,791	160,722	160,376	161,255	162,000	163,620	166,100	170,398	158,322	158,865
No. 0-14 yrs old (% total) (cases/100,000)	7 (12%) (4.4)	6 (14%) (3.7)	7 (12%) (4.4)	7 (10%) (4.3)	4 (8%) (2.5)	4 (8%) (2.4)	2 (5%) (1.2)	3 (5%) (1.8)	6 (9%) (3.8)	9 (14%) (5.7)
No. foreign born (% total)	16 (28%)	9 (21%)	17 (29%)	13 (19%)	8 (16%)	12 (24%)	9 (24%)	10 (18%)	16 (24%)	12 (18%)
No. homeless in Anchorage (cases/100,000)	8 (200)	0 (0)	1 (25)	28 (700)	9 (225)	6 (150)	3 (75)	6 (150)	12 (300)	2 (50)
No. with isoniazid-resistant TB	2	2	2	2	0	1	0	1	7	2
No. with multiple drug resistant TB (MDR-TB)*	1	0	0	1	0	0	0	1	4	1
No. offered HIV testing (% of total)	41 (72%)	33 (77%)	46 (78%)	52 (74%)	39 (78%)	38 (76%)	30 (81%)	37 (65%) [†]	58 (87%)	50 (76%)
No. TB cases infected with HIV	1	2	0	1	1	1	1	1	1	0
No. drug use (IV & non-IV) (% total)	6 (11%)	4 (9%)	2 (3%)	2 (3%)	6 (12%)	5 (10%)	1 (3%)	6 (11%)	8 (12%)	13 (20%)
No. excessive alcohol use (% total)	21 (37%)	12 (28%)	10 (17%)	31 (44%)	21 (42%)	18 (36%)	2 (5%)	13 (32%) [†]	29 (43%)	28 (42%)

* MDR-TB indicates resistance to both isoniazid and rifampin.

[†] Preliminary data

Appendix B: Surveillance Completeness Summary Report

RVCT Field	2006	2007	2008	2009	2010	2011	2012
Age	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Sex	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Ethnicity	100.00	92.00	100.00	100.00	100.00	100.00	100.00
Race	100.00	100.00	100.00	100.00	100.00	100.00	98.46
Country of Origin	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Date Entered US	100.00	100.00	100.00	100.00	100.00	100.00	75.00
Patient Alive or Dead	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Previous Case of TB	100.00	100.00	98.00	100.00	100.00	100.00	98.46
Previous Year TB	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Major Site of Disease	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Sputum Smear	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Sputum Culture	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Microscopic Exam	100.00	100.00	100.00	100.00	100.00	100.00	93.85
Culture of Tissue	100.00	100.00	100.00	100.00	100.00	100.00	98.46
Chest X-Ray	98.57	100.00	100.00	100.00	100.00	100.00	98.46
Skin Test	98.57	100.00	100.00	100.00	98.25	98.51	98.46
Hiv Status	90.00	92.00	88.00	91.89	100.00	100.00	92.31
Hiv Status Age 25-44	95.65	100.00	93.75	90.00	100.00	100.00	93.75
Homeless	100.00	100.00	100.00	100.00	100.00	100.00	98.46
Correction Facility at Dx	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Longterm Care Facility at Dx	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Start Therapy Date	100.00	100.00	96.00	100.00	100.00	100.00	100.00
Injecting Drug Use	100.00	94.00	98.00	100.00	100.00	97.01	95.38
Non-Injecting Drug Use	98.57	96.00	98.00	100.00	98.25	94.03	93.85
Alcohol	100.00	98.00	100.00	100.00	100.00	100.00	96.92
Occupation	97.14	100.00	98.00	100.00	100.00	100.00	92.31
Init Drug Susceptibility	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Sputum Conversion	100.00	100.00	100.00	100.00	100.00	100.00	80.85
Stop Therapy Date	97.06	98.00	97.92	100.00	94.74	91.04	56.25
Reason Therapy Stopped	98.53	98.00	97.92	100.00	94.74	91.04	56.25
Health Care Provider	100.00	100.00	98.00	100.00	91.23	85.07	60.94
DOT	100.00	100.00	97.92	100.00	94.74	91.04	54.69
RIF	100.00	100.00	100.00	100.00	100.00	100.00	100.00
INH	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Mean field completeness	99.24	99.06	98.87	99.46	99.18	98.46	92.00

Appendix C: Alaska Historical TB Control Objectives

(A) Treatment and Case Management of Persons with Active TB

1. At least 90% of persons with newly diagnosed TB, for whom therapy for one year or less is indicated, will complete therapy within 12 months by December 31, 2005.
 - 1.1. At least 95% of persons with newly diagnosed TB, for whom therapy for one year or less is indicated, will complete therapy within 12 months by December 31, 2009.
2. At least 95% of persons with newly diagnosed TB will receive an ATS/ISDA/CDC recommended regimen of treatment using directly observed therapy (DOT) by December 31, 2005.
 - 2.1. This objective will remain the same for December 31, 2009.
3. All A, B1, or B2 immigrants and refugees will be entered into a secure and confidential electronic database by December 31, 2005.
 - 3.1. At least 90% of all locatable A, B1, or B2 immigrants and refugees will be evaluated and within 60 days of arrival in the State by December 31, 2009.
4. For at least 95% of all newly reported culture-positive TB cases, drug susceptibility results will be reported by December 31, 2005.
 - 4.1. This objective will remain the same for December 31, 2009.
5. For at least 80% of all newly reported TB cases age 25-44 years, HIV status will be reported in 2005.
 - 5.1. For at least 85% of all newly reported TB cases age 25-44 years, HIV will be reported in 2009.
6. By December 31, 2005, the incidence of TB among Alaska Natives will be reduced to no more than 35 cases per 100,000 population.
 - 6.1 By December 31, 2009, the incidence of TB among Alaska Natives will be reduced to no more than 30 cases per 100,000 population.

Note: Alaska has not had 50 or greater cases annually in U.S.-born African Americans.

(B) Contact Investigation

7. By December 31, 2005, at least 70% of contacts to sputum AFB smear positive TB cases will have completed evaluation of infection and disease within 5 months of diagnosis.
 - 7.1. By December 31, 2009, at least 85% of contacts to sputum AFB smear positive TB cases will have completed evaluation for infection and disease within 5 months of diagnosis.

8. At least 70% of infected contacts to sputum AFB smear positive TB cases will complete therapy by December 31, 2004.
 - 8.1. At least 85% of infected contacts to sputum AFB smear positive TB cases will complete therapy by December 31, 2009.

(C) TB Surveillance/Reporting

9. All isolates will be sent to the regional genotyping laboratory for genotyping by December 31, 2004.
 - 9.1. This objective will remain the same for December 31, 2009.
10. By December 31, 2004, 90% of all cases of TB will be detected through usual disease reporting and surveillance systems (e.g. telephone, Rapid Telephone Reporting system, or facsimile reports or through electronic laboratory reporting).
 - 10.1. By December 31, 2009, 95% of all cases of TB will be detected through usual disease reporting and surveillance systems.
11. 100% of newly diagnosed cases of TB will be reported to CDC using the CDC-developed electronic reporting system and at least 95% of specified variables will be reported to the CDC annually.
 - 11.1 This objective will remain the same for December 31, 2009.
12. By December 31, 2004, 100% of all suspected and confirmed cases of TB will be maintained in a secure, confidential TB registry that contains the elements needed for the national TB case report, Report of Verified Case of Tuberculosis (RVCT).
 - 12.1 This objective will remain the same for December 31, 2009.
13. By December 31, 2004, 100% of TB/HIV co-infections will be detected through ongoing collaboration between the Alaska TB Program and the Alaska HIV/AIDS Program.
 - 13.1 This objective will remain the same for December 31, 2009.

(D) Human Resource Development

14. The Alaska TB Program will develop a plan for TB Training and Education within 3 months after the cooperative agreement award, or some other defined date pending development of federal resources.

(E) Program Evaluation Activities

15. The Alaska TB Program will develop a program evaluation plan which will be completed in 2005 or some other defined date pending development of federal tools.

Appendix D: TB Program Training and Human Resource Strategy Plan
Progress Report 4/9/13

Objectives and Activities

Goal I:

Establish and improve existing in-service TB training and human resource development

Objective 1:

Maintain designated TB training focal point/coordinator, ongoing.

Activities/Strategies:

- A. Identify TB program staff person to serve in this capacity.

Evaluation: *Completed/Ongoing*. Karen Martinek identified as focal point in 2005 and continues in this role.

- B. Work plan will include focal point activities as an essential element.

Evaluation: *Completed/Ongoing*. Work assignment continues. Ms Martinek continues to be the focal point for TB training and human resource development in Alaska. She also continues to distribute TB news, resources and references by email, provides Nurse-to-Nurse Training in health centers across the state, and provides TB training for public health nurse (PHNs) and others via online webinars.

- C. Designated TB training coordinator will maintain membership in TBETN.

Evaluation: *Completed/Ongoing*. Active membership remains in place since 2004.

- D. Designated TB training coordinator will attend TBETN Biennial Conferences.

Evaluation: *Completed/Ongoing*. Meetings are attended as scheduled.

Objective II:

Maintain fully trained TB Program staff, ongoing.

Activities/Strategies:

- A. All new TB Program staff will participate in TB training courses at the Curry International TB Center, National Jewish Hospital, or equivalent TB training centers.

Evaluation: *Completed/Ongoing*. All long term TB program staff have completed TB training course at the Curry International TB Center (CITC). Dr Michael Cooper has been in his role as Infectious Disease Epidemiologist/TB Controller since July 2011. He participated in a mini-fellowship at the Curry International TB Center, attended the Denver TB Course in October 2011 and has participated in the International Union against TB and Lung Disease meeting in February 2012 and presented on the history of TB in

Alaska at the International Union against TB and Lung Disease meeting in 2013, and participated in the National TB Conference in June 2012.

A new Nurse Epidemiologist, Peggy Cobey, RN, ANP, MPH, was hired in May 2012. Although Peggy has experience with Indian Health Service and the Community health Aide Program, she needs TB training. Unfortunately, the CITC Case Management and Contact Investigation (CMCI) training scheduled for September 2012 was cancelled. The next CMCI course is scheduled for Fall 2013. As an interim training option, Ms. Cobey did participate in the one-day Nurse to nurse Training that was done for the MatSu PHNs in November 2012.

- B. Current staff will maintain TB expertise by periodic participation in TB continuing education including face-to-face training, self-study modules and webinars.

Evaluation: *Completed/Ongoing*. All staff participates in periodic TB training webinars and online educational activities whenever possible. This includes webinars offered by CITC as well as other Regional Training and Medical Consultation Centers. Additionally, weekly information from emailed TB list serves which include references and resources are also reviewed by staff.

Objective III:

By 6/30/10, the new Alaska TB Manual will be in use statewide.

Activities/Strategies:

- A. *Revised Strategy* - TB Manual will be complete and posted online by 6/30/11.

Evaluation: *Completed/Ongoing*. The target date for this was reset to 6/30/11. The TB Manual was posted online in November 2011. It has been very well received by partners and end users. Several major revisions are needed such as incorporating information about the new short-course isoniazid-rifapentine regimen for LTBI treatment, and the availability of nucleic acid amplification testing that was recently implemented by the State Laboratory.

Extensive revisions to the TB Manual were completed and posted in December 2012.

- B. *Revised Strategy* – Plans for a webinar have been deferred indefinitely.

Evaluation: *Ongoing*. Discussion has been underway with the Section of Nursing (SON) since the November 2011 posting of the Manual to identify training needs for PHN end users. To date, questions have been handled individually and no urgent training needs have been identified. As revisions to the Manual are completed and practice issues for PHNs are identified, the need for a training or update webinar will be revisited.

Goal II:

Establish evaluation strategies to improve existing systems and to identify ongoing training and human resource needs.

Objective I;

By 12/31/09, the TB Program will use conference evaluation data from the September 2009 conference, *Tuberculosis: Thinking Globally, Acting Locally* to identify TB educational needs among participants.

Activities/Strategies:

- A. Conference participants will be asked to identify TB educational needs and topics of interest.

Evaluation: *Completed.* The conference was attended by 113 participants including PHN case managers, physicians, infection practitioners, and others. The conference was collaboratively planned and sponsored by the Alaska DHSS, the Municipality of Anchorage DHHS, Alaska Regional Hospital and the Alaska Chapter of the Association of Infection Control Practitioners (APIC). Participant evaluations were very positive. A question was included in the evaluation asking participants to list, "What TB continuing education topics would help you in your practice?" This information was compiled to identify perceived training needs among conference attendees.

- B. *Revised Strategy* - Analyze results educational needs identified by conference participants by 6/30/10.

Evaluation: *Completed.* Results have been analyzed. The training topics identified as "most helpful" by participants include: TB and LTBI treatment; case studies; laboratory/diagnostics, radiology, CT and medication updates, case management issues, and TST screening recommendations and issues.

Objective II:

By 12/30/10, an updated assessment of the educational needs of Alaskan providers will be completed.

Activities/Strategies:

- A. Alaska TB program staff will collaborate with the Curry International TB Center (CITC) RTMCC to design and implement an updated needs assessment. Announcements and reminders were emailed to more than 200 individuals statewide.

Evaluation: *Completed.* Needs assessment completed by CITC August 2010.

- B. *Revised Strategy* - Analyze results of needs assessment by 6/30/11.

Evaluation: *Completed.* Summary of Alaska Needs Assessment received 4/7/11. A key informant interview was scheduled in April 2011 to review results with CITC staff and provide additional information about educational needs.

- C. Collaborate with PHN Training Academy Coordinator, PHN Regional Managers and Nurse Managers to further clarify current PHN TB training needs by 3/31/11.

Evaluation: *Completed*. Several meetings were held with the Southwest Regional Manager and other staff in 2011 to discuss TB training/orientation and continuing education needs and related issues for new and established PHNs. Managers and staff continue to identify the need for TB training for new PHNs and periodic updates for existing staff as priorities. The PHN / EPI TB Workgroup was re-convened in September 2010 to address TB issues and solutions and met three times in 2011. The group has provided important feedback on the TB Manual and TB forms and remains a forum for the ongoing identification of TB education and training needs. Meetings resumed in 2012 and were instrumental in providing user input for the revisions to the TB Manual and identifying other areas for future policy development.

- D. Collaborate with stakeholders – TB program staff, PHN staff and management, etc. – to identify priority needs by 5/31/11.

Evaluation: *Completed/Ongoing*. Two to three educational priorities identified.

PHNs in South east Alaska identified the need for training on the updated guidelines and process for completing TB screening for immigrants and refugees per the 2007 / 2008 CDC revisions to the reporting format and guidelines. PHNs in Anchorage and Fairbanks have also identified this as a priority. In response to this request, a new module for *Nurse-to-Nurse (N2N)* Training was developed and incorporated into the July 2010 trainings held in Ketchikan and Juneau. The module was also presented to PHNs and other staff at the Municipality of Anchorage. This new session was very well received by all training participants and will be incorporated into future *N2N* trainings since it is relevant to both high and low incidence regions. An overview of TB laboratory technologies has also been identified during trainings as a future topic and will be developed. The CDC requirement for implementation of cohort review by the end of 2010 necessitated the development of a cohort review process that will work throughout Alaska. Although a pilot test of Alaska's cohort review model was scheduled in Anchorage for November 2010, it was postponed until February 2011 due to staffing issues. The Municipality has Alaska's only dedicated TB nurse case managers, a part time medical officer and management staff who would be supportive of the process. Unfortunately, one of the two nurse case managers was on extended leave, leaving the remaining nurse case manager to oversee all essential TB prevention and control activities including the care and treatment of all TB and LTBI patients, DOT and contact investigation, immigrant screening, etc. In March 2011, Karen Martinek participated in Utah's cohort review. Since their materials and process were used for the February 2011 review in Anchorage, it was very helpful to experience the "mature" Utah process with the benefit of data and a PowerPoint summary of each case presented. Development of the cohort review process and training for participating staff will be a priority during the last quarter of 2011. Although another cohort review was projected during 2011, staff transitions and vacancies in the State TB Program have not allowed this to occur.

The addition of the Hospital Acquired Infection (HAI) Program into the Infectious Disease/TB Program unit has also provided enhanced collaboration with infection practitioners (IPs) across the state. Due to turnover and recent identification of TB in acute care facilities, the group has requested training in TB infection control, discharge planning, and collaboration with public health. Training was provided by webinar in April 2011, and was repeated at the annual APIC conference in Anchorage in November 2011. It is scheduled for presentation again at the upcoming September 2013 APIC Conference at the request of IPs.

Providing continuing nursing education (CNE) units for training is often very important to nurses. In collaboration with public health preparedness activities, Kim Spink, EPI Team nurse and HAI Coordinator became a CNE provider thru the Montana Nurses Association. Our ability to provide CNEs for attending TB training activities has been a bonus and important incentive for participants.

Objective III:

By December 31, 2012, training sessions for at least two educational priorities will be developed and pilot tested with TB Program staff and at least one PHN region.

Activities/Strategies:

- A. Explore/review appropriate materials from CDC and other TB resources for priorities identified by 9/30/11.

Evaluation: *Completed/Ongoing*. Educational materials are reviewed on an ongoing basis. Nurse case management for PHNs continues to be a priority. Monthly case management teleconferences are routinely held with PHNs and invited providers in the Yukon-Kuskokwim, Norton Sound (Nome), Maniilaq (Kotzebue) and Fairbanks regions. Periodic teleconferences are also scheduled as needed with PHNs in other regions of the state. Monthly face-to-face meetings are also held to review Anchorage case and suspects with Municipality of Anchorage PHNs, Dr Chandler and outreach workers.

TB Infection Control training was provided for Infection Preventionists (IPs) by Webinar in April 2011 and during the Association of Practitioners of Infection Control (APIC) Conference in November 2011. An overview of TB epidemiology, diagnosis and treatment was provided for Physician's assistant students in May 2011 and again by Dr Cooper in May 2012. A webinar on Screening Immigrants and refugees for Tuberculosis was also presented to PHNs statewide in July 2011. Nurse-to-Nurse Training was also provided to the Municipality of Anchorage PHN staff in March 2012, North Slope Borough (Barrow) in August, Nome in September, Bethel in October and MatSu in November 2012.

- B. *Revised Strategy* - Collaborate with TB program staff, PHN Training Academy Coordinator and Regional Nurse Managers on selection and development of PHN training sessions by 12/30/12.

Evaluation: *Completed/Ongoing*. Meetings held. The need for PHN training modules has become less of a priority for SON as it has focused more heavily on online training,

including TB training, for new PHNs. Dialogue with SON continues and strategies for providing basic TB to new PHNs through the “PHN Academy” webinar series will continue to be explored. It is likely that TB training will be incorporated into the Spring or Fall 2013 series. A new module on “Epidemiology 101” was developed as an adjunct to Nurse-to-Nurse Training. It was first presented in Barrow in August and was used again in Nome in September 2012. It was well-received.

C. Training sessions developed for two focus areas by 6/30/12.

Evaluation: *Completed/Ongoing*. A module on Immigrant and Refugees Screening was developed and presented to PHNs in several areas of the state during Nurse-to-Nurse Training. It was also offered to PHNs statewide in webinar format in July 2011. A TB infection control module was also developed and presented in April and November 2011. It will be offered again during the September 2013 APIC Conference in Anchorage.

D. Training sessions piloted tested on TB Program staff and one PHN region by 12/31/12.

Evaluation: *Completed*. Training(s) held. See A above.

Goal III:

Establish and improve patient education and communications capacity within the program.

Objective 1:

Revised Goal. By 12/30/13, the TB Program will collaborate with PHNs to update at least two types of educational materials specific for Alaska Native peoples. This activity will build upon outreach and training provided to PHNs and providers in high incidence areas.

Activities/Strategies:

A. Identify prospective members of a PHN / Epi TB Workgroup representing at least three large regions including the Yukon-Kuskokwim Delta, North Slope, Norton Sound (Nome), Bristol Bay, Maniilaq (Kotzebue) and the Anchorage area.

Evaluation: Completed. The PHN / EPI TB Workgroup was reconvened in September 2010. Three meetings were held in 2012.

B. Identify simple print material targeting Alaska Native populations that can be used to reinforce essential elements of PHN case management such as treatment of LTBI, treatment of active TB, etc.

C. *Revised Strategy* – Explore options for print and / or radio public service announcements (PSAs) to deliver public health messages that raise community awareness and reinforce important elements of community-based TB preemption and control such as symptoms of TB, TB transmission, and the importance of TB and LTBI treatment, etc. in high incidence regions of Alaska. Print materials or PSAs in English and at least one Alaska

Native language, such as Yupik, could developed for the Southwest or Northern regions of the state. Additionally, a statewide TB Awareness Calendar, modeled after the Norton Sound calendar, could also be considered as a method to educate school children about TB and deliver important prevention messages.

Evaluation: *Ongoing*. Due to staff changes and vacancies, little progress was made in this area. A National Public Radio (NPR) story on TB in Alaska was aired statewide and nationally in April 2012. It included a background interview with a former TB patient and family member who is also a Community Health Aide/Practitioner (CHA/P). The story included a joint interview with Dr Michael Cooper and Karen Martinek.

- D. Explore options for developing a TB educational video telling the stories of Alaska Natives treated for tuberculosis.

Evaluation: *Ongoing*. Currently, the “What is TB? (not TV)” DVD produced by the British Columbia Centre for Disease Control, Canada, is being used for community education in many villages across Alaska. It incorporates story-telling about tuberculosis, so important in Alaska native cultures, to provide TB education to a lay audience. To date, this is the most culturally-appropriate TB education film available and has been very well-received by PHNs and communities. We will continue to assess the need to develop an Alaska-specific educational video with stakeholders.

- E. Reassess communications capacity of the TB Program in FY2014.

Evaluation: Assessment completed in FY2014.

Goal IV:

Coordinate training related to TB control with training for other disease control interventions such as HIV/AIDS, STD and Hepatitis.

Objective 1:

By June 30, 2011, collaborate with the AIDS/STD and Hepatitis Programs to explore training needs.

Activities/Strategies:

- A. Work with AIDS/STD and Hepatitis program managers and staff to identify TB training needs and educational strategies. Informal meetings are held at least twice a year with AIDS/STD staff to discuss TB training needs. The Alaska Hepatitis Program Coordinator, Ginger Provo, is one of five Nurse Epidemiologists working in the Infectious Disease Team. As such, her routine duties include oversight of TB case management by PHNs. Ms. Provo is also a member of the statewide HIV Prevention Planning Group, which meets quarterly. This relationship provides an ongoing mechanism to identify TB training needs in AIDS/STD staff, their community partners and the population served.

Evaluation: *Ongoing/Completed*. Informal meeting continue with TB, hepatitis, and AIDS/STD staff.

- B. Explore options for using experienced disease investigation HIV/STD staff to train PHN case managers on interviewing skills to improve contact investigations.

Evaluation: Meeting held.

- C. *Revised strategy* – Nurse Managers from the SON have not identified the need to provide additional training to PHNs on interviewing skills at this time. Contact investigation data suggest that the identification, screening and evaluation of contacts to (+) AFB smear TB cases are occurring according to CDC guidelines. Revisit the need for providing training on advanced interviewing skills in 2012.

Evaluation: *Completed/Ongoing*. Training(s) developed and held. At this time, Nurse-to-Nurse Training is meeting the educational needs of PHNs.

- D. *Revised strategy* - Develop and provide TB training to AIDS/STD or partner agencies staff during FY2012. This task will be postponed to 2013.

Evaluation: *Ongoing*. AIDS/STD staff continues to decline formal TB training. Coinfection is rare and informal training is meeting current needs. Training(s) developed and held.

Goal V:

Target other health care providers or organizations serving high-risk populations.

Objective 1:

By 12/31/13, provide training about the diagnosis and treatment of TB to providers in at least three of the 12 regional Native Corporation areas where TB incidence is highest.

Activities/Strategies:

- A. Explore educational needs with lead regional medical staff.

Evaluation: *Ongoing*. Dr. Michael Cooper is developing important relationships with providers across the state through face-to-face encounters, telephone consultations, presentations, interviews, and participation in monthly grand rounds in Anchorage. These activities also help to provide important insight about the educational needs of the medical and provider community. He and staff have presented to various groups in Anchorage, including grand rounds at local hospitals, an outgoing Physician Assistant class, the Alaska Public Health Summit, the Annual Maternal Child Health and Immunization

Conference, Alaska Native Health and Wellness Conference, and the (international) Circumpolar Health Conference, Fairbanks, during 2012. TB grand rounds and numerous presentations with clinic/hospital groups occurred in July, 2012 in Fairbanks. Grand rounds were also held in Nome in September and Bethel in October 2012. Karen Martinek also provided additional training for PHN case managers in Nome and Bethel during those visits. A TB webinar for world TB day March 24th, 2013 was organized, and included partners from different agencies throughout the state.

B. Identify priority areas for training.

Evaluation: *Ongoing*. Although many of the existing Case Managers and Discharge Planners at ANMC attended the October 2008 Nurse-to-Nurse training in Anchorage, most of the nurses now responsible for these functions are new and untrained. As a result, there have been problems with some recently discharged TB suspects and cases, including some infectious patients. Working with ANMC staff to revisit discharge policies and timelines and train staff on their implementation, will be a priority. The April 2011 webinar and November 2011 face-to-face training on TB infection control, discharge planning and collaboration with public health should address some of the most critical needs of ANMC staff. Meetings will be scheduled in 2013 to discuss case management and discharge planning issues with ANMC, MOA and State staff.

C. Develop and present educational sessions.

Evaluation: Presentations done as described in A and B above.

D. Analyze participant evaluations to plan subsequent training.

Evaluation: Kim Spink analyzes and retains all evaluations from Nurse-to-Nurse Training for CNE purposes.

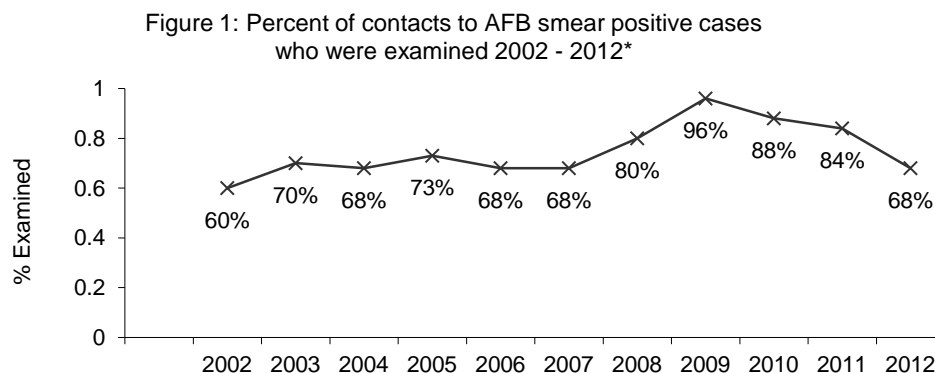
E. Explore training needs of Department of Corrections staff during FY2013.

Evaluation: *Ongoing*. Staff education and TB training continue to be discussed at least yearly with lead nursing and medical staff in the correctional system. To date, corrections staff have not requested or scheduled training.

Appendix E: TB Evaluation Plan - Enhanced Contact Investigation Project (ECIP)

The overall goal of the ECIP is to improve performance in Objective C of the Alaska TB Program Grant which states that “At least 70% of contacts to sputum AFB-smear positive TB cases will be evaluated for infection and disease”. This objective has been met or exceeded since 2008. (Figure 1). The Alaska TB Program has made and maintained significant success in the evaluation of

contacts to AFB-smear positive TB cases since the inception of the ECIP. The discontinuation of CDC's TIMS, the delay in transitioning to a functional commercial TB module (TB-PAM), and the absence and turnover of data entry staff do, however, continue to negatively impact Alaska's ability to easily generate data and monitor quarterly progress with this objective.



* 2012 data are preliminary

It is expected that Alaska's ability to evaluate programmatic activities will be enhanced by ongoing participation in the TB Program Evaluation Network (PEN) which was established in 2009.

Objectives and Status:

Objectives for Phase 1 of the ECIP include the following:

1. *Identify barriers to the identification and evaluation of contacts to AFB smear positive cases of TB by 6/30/06.*

This objective has been met. Public health nurse (PHN) focus group/work group identified real and perceived barriers to identification and evaluation of contacts to AFB smear positive cases.

Work to identify and monitor both new and existing barriers continues.

2. *Explore options and strategies for increasing the number of contacts to AFB smear positive TB cases who are evaluated for infection and disease by 6/30/06.*

This objective has been met. PHN work group reviewed available information and materials from other jurisdictions in addition to brainstorming uniquely Alaskan strategies for increasing the number of contacts to smear positive cases that are evaluated.

Data, both statewide and regional, are being provided at least annually to state and grantee PHNs to assist them to monitor regional trends in the identification, evaluation and treatment of persons who were contacts to AFB-smear positive cases of tuberculosis. This will improve the likelihood that PHNs will identify ineffective approaches and explore

new strategies to improve the both the timeliness and percentage of contacts to AFB smear positive cases who are evaluated.

3. *Develop new contact investigation standards and forms by 9/30/06.*

This objective has been met. The PHN work group identified strengths and weaknesses of the current contact investigation guidelines and data collection form. The group thoroughly reviewed the new Centers for Disease Control and Prevention. Guidelines for the Investigation of Contacts of Persons with Infectious Tuberculosis: Recommendations from the National Tuberculosis Controllers Association and CDC, and Guidelines for Using the QuantiFERON–TB Gold Test for Detecting Mycobacterium tuberculosis infection, United States. MMWR 2005;54 (No. RR-15):[1-47]. Additionally, contact investigation protocol and forms from many other jurisdictions were collected and integrated into the new contact investigation (CI) form. The 2005 CDC Guidelines were also endorsed by the group.

The new Alaska TB Manual and Forms section were posted online in November 2011. An extensive revision was completed and posted online in December 2012. The Manual has been well-received by users statewide.

4. *Implement new contact investigation standards and data collection forms by 10/31/06.*

This objective has been met. The new Alaska TB Manual and Forms section were posted online in November 2011. The Forms Section is incorporated in the manual but is also available as a stand-alone document for ease of use.

New standards and forms are included in the new Alaska TB Manual. Guidelines for using the forms have been incorporated into all *Nurse-to-Nurse* trainings that have been held for PHNs in Bethel, MatSu, Nome, Fairbanks, Ketchikan, Juneau, Kotzebue, and Anchorage. Most regions and PHNs have been using the draft form since 2008.

5. *Increase the percentage of contacts to AFB smear positive TB cases who are evaluated for infection and disease according to new standards to 75% by 12/31/06.*

This objective was attained for the first time during 2008, when 80% of contacts to AFB smear positive cases were examined. (Table 1.) A revised goal will be to maintain an evaluation rate of 75% among contacts to AFB smear positive TB cases in subsequent years. This was exceeded in 2009 with 96% of contacts to AFB smear positive TB cases evaluated. The SON has identified several TB goals and objectives as part of its current Management Plan, including tracking of the number of contacts to AFB smear positive that are identified and evaluated. Baseline and regional data were first presented to Regional SON Managers in September 2006. Quarterly data have subsequently been generated and reviewed by TB Program staff, including special runs separating the Municipality of Anchorage from the MatSu Borough (combined as Anchorage/MatSu Region).

Table 1: Summary contact investigation data for AFB smear positive TB cases, 2002 - 2012

Year	Contacts examined		Contacts infected		Contacts with LTBI started on LTBI TX		Contacts with LTBI completed LTBI TX	
	Number	%	Number	%	Number	%	Number	%
2002	147	62	75	51	26	35	22	85
2003	218	70	100	46	10	10	8	80
2004	223	69	80	36	35	44	24	69
2005	188	74	69	37	36	52	22	61
2006	200	68	69	35	15	22	10	67
2007	276	69	95	34	29	31	16	55
2008	106	80	42	40	12	29	8	67
2009	129	96	49	38	11	22	9	82
2010	206	88	100	49	38	38	24	63
2011	284	84	102	36	44	43	28	64
2012*	200	68	99	50	35	35	14	40

*2012 data are preliminary

Regional data have been provided to SON Regional Nurse Managers and region-specific strategies to improve contact evaluation follow-up have been explored. Repeat contact investigation training has been provided to PHNs in Bethel, MatSu, Fairbanks and Nome.

Preliminary 2012 data show a decrease (68%) in the percent of examined contacts when compared to 84% in 2011. While data are still provisional due to ongoing contact investigation activities for TB cases identified late in 2012, it is anticipated that the final 2012 data will reflect a decrease in the percent of contacts examined due to an exposure in a correctional facility that was identified after a number of exposed inmates were released. Despite many attempts to reach these inmates by phone, home visit or letter, most could not be located.

The revised 2010 ECIP Objectives also focus on **LTBI start and completion rates for infected contacts to AFB smear positive TB cases**. In 2009, 30 (61%) of infected contacts to AFB smear positive TB cases had been previously treated for LTBI or active TB disease and thus were not candidates for LTBI treatment. In 2010, 70 (70%) and in 2011 60 (58%) of infected contacts had, in fact, been diagnosed previously with LTBI or TB. This trend has continued through 2012 with 60 (60%) all infected contacts having history of LTBI or TB. It will be important to generate data and monitor trends on the number and percentage of **newly infected contacts** to AFB smear positive TB cases that start and complete LTBI treatment to fully evaluate the Alaska TB Program's performance in this important area. It is unclear if poor LTBI treatment completion rates are due to actual failures to complete treatment, discontinuation of universal DOPT in the Norton Sound region, medically advised suspension of treatment due to adverse reactions, incomplete reporting, incomplete data entry, or other factors. The Alaska TB program will need to more thoroughly understand the issues contributing to poor LTBI treatment completion rates in newly infected contacts to AFB-smear positive in order to improve outcomes with this important TB prevention and control strategy.

It is hoped that the use of the new 12-week Isoniazid-Rifapentine (3HP) regimen, primarily in the YK region and Municipality of Anchorage, will contribute to improved treatment completion rates among infected contacts as well as others. Once 2012 data are finalized, additional analysis will be done to determine if LTBI treatment using the 3HP regimen was, in fact, more likely to be completed when compared to other regimens.

Table 2: Summary contact investigation data for **newly** infected contacts to AFB-smear positive cases, 2009 - 2012

Year	Contacts examined		Infected contacts		Newly infected contacts		Newly infected contacts with LTBI started on LTBI TX		Newly infected contacts with LTBI completed LTBI TX	
	Number	%	Number	%	Number	%	Number	%	Number	%
2009	129	96	49	38	13	39	11	85	10	91
2010	206	88	100	49	29	30	18	63	8	44
2011	284	84	102	36	42	42	34	81	21	62
2012*	200	68	99	50	39	40	26	67	6	27

*2012 data are preliminary

A number of newly infected contacts have been started on the new 12-week INH/RPT regimen and many have completed. It is anticipated that this new LTBI treatment option may substantially increase the number of newly infected contacts who both start and complete LTBI treatment.

New Objective:

6. *Develop and pilot test a cohort review process for Alaska that will enhance TB case management, outcomes and accountability, including contact investigation, by December 31, 2010.*

The focal point collected and reviewed forms and guidelines from CDC, the RTMCCs, and other jurisdictions, particularly low incidence states, to assist in the development of a an Alaska cohort review process.

The Municipality of Anchorage (MOA) agreed to participate in a face-to-face cohort review before 12/31/10 to allow the participation of all Alaska TB Program staff as well as the MOA Medical Officer, TB Nurse case managers, DOT aides and other staff. Although a pilot test of Alaska's cohort review model was scheduled in Anchorage for November 2010, it was postponed until February 2011 due to staffing issues. The Municipality has Alaska's only dedicated TB nurse case managers, a part time medical officer and management staff. Unfortunately, one of the two nurse case managers was on extended leave, leaving the remaining nurse case manager to oversee all essential TB prevention and control activities including the care and treatment of all TB and LTBI patients, DOT and contact investigation, immigrant screening, etc. As a result, the pilot cohort review was rescheduled and completed in February 2011.

In March 2011, Karen Martinek participated in Utah's cohort review. Since their materials and process were used for the February 2011 review in Anchorage, it was very helpful to experience the "mature" Utah process with the benefit of data and a PowerPoint summary of each case presented. Development of the cohort review process and training for participating regions and PHNs will be a priority during the last quarter of 2011. It is also anticipated that a webinar format will be developed to provide cohort review training during 2011 to PHN case managers and providers in other areas of Alaska. Evaluation of the MOA pilot cohort review will be used to assist with development of a model suitable for teleconferencing with high incidence regions in Alaska. Training will be developed and provided to state PHN case managers, most likely through a web-based format.

Due to vacancies and TB Program staffing changes during 2011, cohort review has not been done since February 2011 and was to be revisited by 9/30/12.

As noted above, Maggie Grinnell, a Public Health Associate Program (PHAP) worker, joined the program in July 2012 and compiled materials and forms used in many other jurisdictions for cohort review. After careful examination of her work, a decision was made to resume cohort review before the end of 2012. That decision, however, was reevaluated after Karen Martinek participated in the 2012 TB PEN – ETN Meeting and attended the breakout session and poster presented by the Washington TB Program, a long-standing champion of cohort review. It seems that Washington has reconsidered its cohort review process as a result of dwindling interest and participation in favor of more "real time" case reviews that also focus on indicator data. Alaska has continued to standardize monthly case review data elements, reporting, and feedback. It is anticipated that retrospective cohort review will be revisited in 2013 while monthly real time case management meetings and teleconferences continue.

Critical to the implementation of cohort review or enhanced case conferences that involve providers as well as PHNs, will be opportunities for Dr. Cooper to interact with local and statewide providers through telephone consultations and travel to important hub communities to both meet the provider community and present updated information on the epidemiology, diagnosis and treatment of TB and LTBI in Alaska.

7. *Continue to assist remote villages and regions and the public health nurses who serves these region by engaging in TB Sweeps.*

TB Sweeps

TB Sweeps have been used for many years in Alaska as an important TB prevention and control strategy in high-risk populations and communities. Sweeps are usually done in response to newly diagnosed TB cases, unexplained clusters of TST conversions among school children who are tested annually, or outbreaks in villages or communities with a history of previous TB outbreaks and high prevalence of persons with LTBI / old treated TB - "old positives". These collaborative public health interventions employ a

community-specific approach based on epidemiologic data and the community / cultural environment to expand or evaluate contact investigation activities or implement an outbreak response. TB Sweeps are routinely done in targeted communities in the Northern and Southwest Regions as well as in Anchorage shelters and soup kitchens. Annually, 3-5 village sweeps and two (2) Anchorage sweeps targeting the homeless population are done. TB Sweeps have been successful in completing or expanding contact investigations, identifying persons with TB and LTBI, and responding to ongoing transmission as suggested by programmatic or GIMS data.

Teams of 3 – 5 nurses, including itinerant or regional PHNs, and at least one Nurse Epidemiologist from the Alaska TB Program travel to small, remote villages to screen as many residents as possible within a 4-5 day period. This usually includes TSTs for all school and Head Start students and other community members, unless contraindicated, and symptom screening and collection of two (2) sputa for the large numbers of residents with prior positive TSTs. Collaborative planning is done with PHNs, tribal entities and corporations, schools and community health aides. Screening is advertised and “raffle prizes” (gift certificates to local stores, fuel suppliers, etc.) for completed screening facilitate participation. Local helpers, transportation and interpreters are hired as needed. Community meetings and education are always offered to meet community needs and raise TB awareness. Sweeps also provide an important opportunity for itinerant PHN case managers and expert TB Program nurses to interact directly with persons diagnosed with TB and LTBI in their family and community settings. Face-to-face supervision and training for local DOT Aides is also done. This model has been so successful in Alaska, that PHNs will often do “mini sweeps” in villages where TB is a concern.